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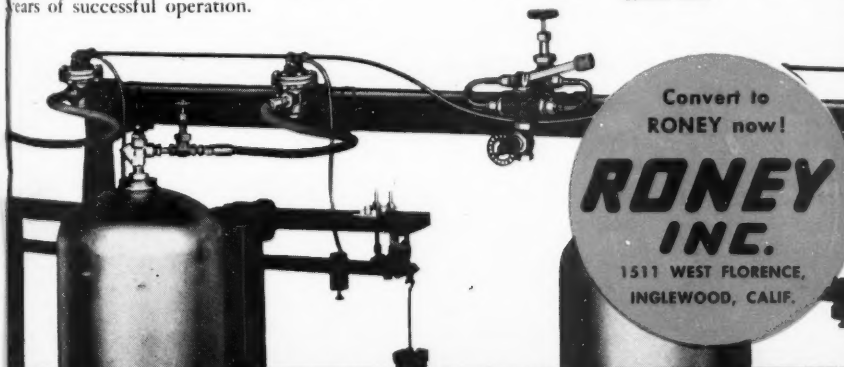
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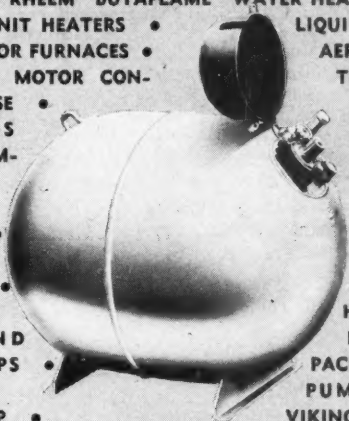


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LETTERS

• **BUTANE-PROPANE** News welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed by them.—Editor.

Gentlemen:

We are distributors of warm air heating equipment in this state. This state is a large user of gas-fired warm air furnaces. However, due to the shortage of manufactured gas, there have been very few installations of gas fired equipment. Our customers are now asking us whether it would not be too uneconomical to use liquid petroleum gas for house heating.

We are writing to you to ask whether you have comparative information showing costs of operation for house heating between manufactured gas and liquid petroleum gas.

L.F.

New Jersey

We do not know the heating value of the manufactured gas to which you refer nor do

we have any information on the cost of this gas or of liquefied petroleum gases in your state. However, we have prepared the accompanying table which should aid you in calculating the comparative costs.

The chart will enable you to reduce the costs of the fuels to a common basis of comparison.

Assume that coal gas having a heating value of 520 Btu per cu. ft. costs \$1.20 per 1000 cu. ft. Then one therm would cost $193/1000 \times \$1.20 = \232 .

If propane cost 4.5c per lb., one therm would cost $4.6 \text{ lbs.} \times 4.5c = \217 .

The "Bottled Gas Manual," published by us, has several chapters explaining the relative costs of liquefied petroleum gas versus coal, wood, oil, gas and electricity. It also devotes chapters to converting space heaters and other units to use with liquefied petroleum gas, and points out other savings accrued by using gas in place of wood, coal, electricity, etc.—Ed.

Gentlemen:

The Btu rating on the gas boiler for an installation has been changed from a 2,000,000 to a 1,500,000. This boiler will be used for steam heat.

We would like to know if a heat exchanger will be necessary for this

Quantity of Various Types of Fuel Required to Produce One Therm
(100,000 Btu)

Type of Fuel	Unit of Measurement	Heating Value Per Unit of Measurement-Btu	Units to Furnish 1 Therm
Coal Gas	cubic feet	520	193 cu. ft.
Coal Gas	" "	570	176 cu. ft.
Coke Oven Gas	" "	600	167 cu. ft.
Carburetted Water Gas	" "	530	189 cu. ft.
Carburetted Water Gas	" "	840	119 cu. ft.
Natural Gas	" "	1000	100 cu. ft.
Normal Butane	" "	3267	30.6 cu. ft.
Normal Butane	pound	21,340	4.7 pound
Normal Butane	gallon	103,000	.97 gallon
Propane	cu. ft.	2525	39.6 cu. ft.
Propane	pound	21,690	4.6 pound
Propane	gallon	91,300	1.1 gallon

unit if we tie two 1150 underground storage tanks together and use propane fuel? The boiler would be on and off in operation and we feel that this ample storage would eliminate the necessity of a vaporizer.

G.T.

Nebraska

We feel that the most satisfactory solution to your problem is liquid withdrawal from the tank and a vaporizer.

A fair estimate of fuel consumption by the boiler which you described is 8 to 10 gallons per hour, average, and it may be higher on cold days. In an 8-hour day, 64 to 80 gallons would be consumed. It requires approximately 160 Btu to vaporize a pound of propane at 35°F. This means that 54,400 Btu (80 gals. x 4.25 lbs. x 160 Btu) must be supplied to vaporize 80 gals. of propane.

There are two sources of heat: namely, the liquid propane in the tank, and the earth surrounding the tank. The immediate source of heat is the liquid in the tank. If 54,400 Btu is removed from 1000 gals. of liquid, the temperature of the liquid will be reduced about 22½°F. As the heat is removed from the liquid by vaporization, heat begins to move in from the adjacent soil. However, soil is a poor conductor of heat, so the supply of heat in the soil surrounding the tank is soon exhausted.

Additional heat from more remote areas will move to the tank very slowly. If the temperature in the tank drops below freezing, the moisture in the soil adjacent to the tank will freeze, thus further retarding heat transfer to the tank.—Ed.

Gentlemen:

Will propane in a gaseous form deliver more Btu's at 60° than it will at 0°?

Also, will a 100-lb. cylinder of propane deliver more Btu's per pound or cubic foot at higher outside temperatures?

H.K.E.

Massachusetts

A cubic foot of propane measured at 60°F will deliver less Btu's than a cubic foot which is measured at 0°F. The "Handbook Butane-Propane Gases" gives the heating value of a cubic foot of propane as 2521 Btu's when measured at 60°F. When measured at 0°F, the gas would be more dense and a cubic foot of propane would contain 2850 Btu's.

The pound is not affected by temperature. A pound of propane has the same heating value at any temperature. Gallons and cubic feet, however, become more dense as the temperature decreases and, therefore, carry more heat units per gallon or cubic foot.—Ed.

Gentlemen:

Can you tell us what causes moisture condensation in houses with vented heaters?

We have had trouble this last winter in two houses with wall heaters and in one home with a floor furnace installed.

In this last instance, the house heated good and had insulation in the ceiling but not in the walls. It was stucco on the outside. We used a 45,000 Btu furnace. A water heater was connected to the vent and it had two elbows in it. A horizontal run of about 8' and a vertical rise of about 14'. We used 4" metalbestos for vent.

O.C.W.

Utah

It is possible that there are leaks in the combustion chambers of the two units you mention. It will be well for you to examine them closely for defects. Be sure, too, that the flues are properly removing the combustion products.

We believe the condition you mention is caused by the circulation of water vapors from cooking and boiling water in the kitchen. These vapors circulate through the house and when they contact cold window panes or wall surfaces they condense.

A tightly fitted house will cause the air in the house to become laden with water vapor in a short time as there is little chance for ventilation. Check and see if the condition is more pronounced during cooking periods.

Better ventilation and means for removing cooking fumes from the kitchen will improve the condition.—Ed.

Gentlemen:

We are contemplating the hook-up of a 1000-gal. tank to supply propane gas for a furnace installation in a church. The furnace has a Lo-blast

No. 4 gas burner of the inshot type. What we want to know is, will it be necessary for proper vaporization to install 2 1000-gal. tanks on this installation in order to have vaporization of the gas without the use of a vaporizer?

L. B. J.

Minnesota

A single 1000-gallon propane tank will easily vaporize 200,000 Btu's per hour of propane gas, providing the tank always contains not less than one quarter of its capacity in propane. Of course, two tanks would vaporize twice as much.

As you do not indicate the Btu capacity per hour of the furnace mentioned, we cannot say whether or not this would serve your purposes.—Ed.

Gentlemen:

Would appreciate all the information you may have regarding the use of propane heaters, effect, etc., in a greenhouse raising orchids and other plants.

L.A.B.

Washington

Liquefied petroleum gas is being used in greenhouses in many localities with great success. Unvented heaters are preferred due to the increase in humidity and the benefits of CO₂ in the products of combustion.

Each greenhouse has a problem of its own. Some can be heated by using a number of small, unvented heaters located in various parts of the building. The heat should be applied low—at ground level—or below the beds if they are elevated above the ground.—Ed.

Gentlemen:

Four years ago I went into the propane business and have made many furnace installations since that time.

Most of these furnaces were vented into the brick chimneys that were already in the home.

One case in particular has complained that the gas is deteriorating the chimney as a great amount of mortar and brick falls down inside the chimney each year and has to be cleaned out.

Please tell me what you know about the effects of propane fumes on chimneys and what is being done about it.

J.M.

Montana

All gases, including butane and propane, have a drying effect upon brick chimneys, resulting in the loosening of the mortar and the gradual disintegration of the chimney. It is also true that chimneys installed for use with coal and wood furnaces are too large for venting gas appliances.

The usual procedure is to install metal or tile chimneys which may be inserted inside the brick chimneys or installed as separate vents.

Venting is a big subject in its own right and the size of gas vents is determined by the number of units used and the Btu inputs of those units.—Ed.

Gentlemen:

Can you send me the address where I can obtain a cost chart on heating, for comparing costs figuring fuel oil at 12 cents per gallon, and LP-Gas at 6 cents per pound? For home heating purposes.

L.R.

West Virginia

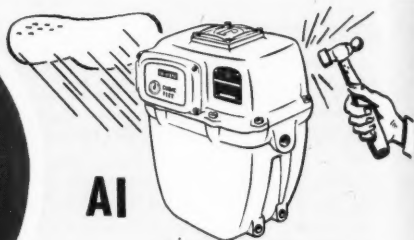
In "The Bottled Gas Manual," which we publish, there are four chapters devoted to comparative costs of liquefied petroleum gas and other fuels. The chapter on oil begins on Page 231.—Ed.





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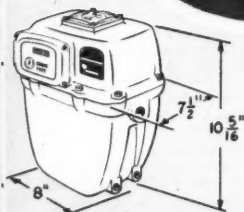
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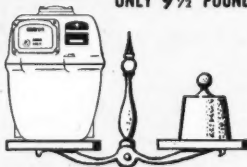
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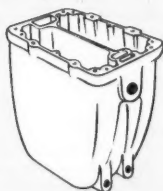
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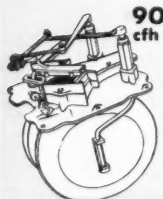
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COMMENT

Potential Load

THERE are three tremendous fields which offer dealers increased opportunity to build additional load in the immediate years ahead.

These are house heating, internal combustion engine usage, and the dehydration of farm products—each one demanding huge volumes of fuel, the last two offering a summer balance to the winter heating load.

The heating load is a natural for every dealer now selling domestic customers. He is already set up for this class of business. The same salesmen and servicemen and equipment he now has will fit into the picture. All he needs to do is add more appliances to his stock and learn the simple rules for estimating space heating requirements.

As he expands this branch of his business, he will be able to install larger consumer storage and better regulate his deliveries.

Ample Supply

The fuel supply problem has been successfully licked as a result of greatly expanded production facilities. The gap has narrowed on competitive fuel prices. The advantages and conveniences of gas over oil, coal, and wood are so evident that they are almost axiomatic, as certainly is

the fact that the larger the load, the bigger the profits to dealers.

So the next move is to start a selling campaign to tie in with the newly-launched house heating promotion of the American Gas Assn. entitled, "Sell 'Em Comfort." Carry to all of your existing customers the message of house heating with gas. You already know them; they are using your fuel and your services. It should be simple to add a floor heater or a floor or wall furnace or a central furnace to the line.

Inferior Fuels

Then start on those who are struggling along on less satisfactory fuels. Whenever you see smoke pouring out of a chimney on a crisp morning, there is a jim-dandy prospect. Wood or coal is the heating medium, and who wants to store tons of coal in the yard or cellar and carry out ashes all winter?

If a wood pile practically hides the kitchen door of another home, there is Capital Prospect No. 2, and when you see dirty oil drums against the house, and spilled oil on the driveway, you may know you have a push-over.

A large portion of this month's *BUTANE-PROPANE News* is devoted to information which will be helpful to you in building your heating load. It appears in this July issue to alert

1950 OUTLOOK

Sales of gas appliances and equipment in 1950 will exceed 1949 totals in every division of the industry. In some classifications it will more than double pre-war averages, according to a recent poll made among the 550 gas appliance and equipment manufacturer members of GAMA. This will bring industry sales close to its 1947-1948 all-time peaks.

Sales of gas-fired central heating equipment will be about 30% over 1949. Floor furnaces and direct heating equipment will be about 25% greater. Encouraging, too, to those dealers who stock other gas-fired appliances was the expectation that other equipment sales will increase in the same proportion.

To reach these goals will require intensified sales training and the introduction of more creative selling techniques among dealer outlets.—GAMA reports.

you to the importance of surveying now your field for next winter's heating demand. If you can obtain some advance estimate of the probable number and sizes of heating equipment you will need, you can place your orders with manufacturers in time to get shipments before the fall rush begins.

Stock various models of heaters and furnaces for early delivery. Put samples on your showroom floors, and right now—in the hot summer months—begin talking and selling next winter's comfort to your customers.

Department stores don't wait until December to order their Christmas stocks nor to campaign for the "Christmas spirit." As a merchant,

you must anticipate the needs of your customers. Otherwise, you are caught short when chill winds blow next October and there is a mad scramble for heaters.

The Selling Job

But it is folly to sell gas heat haphazardly. It requires inspection of premises, an understanding of family needs, an estimate of the amount of fuel storage capacity needed, an agreement covering periods of delivery, and—most important of all—supplying the customer with the size and character of heating units that will most adequately serve his comfort and well-being when the winter storms set in.

You can't perform any of these chores unless you prepare yourself for them by enlarging your fund of knowledge regarding heating requirements and technicalities.

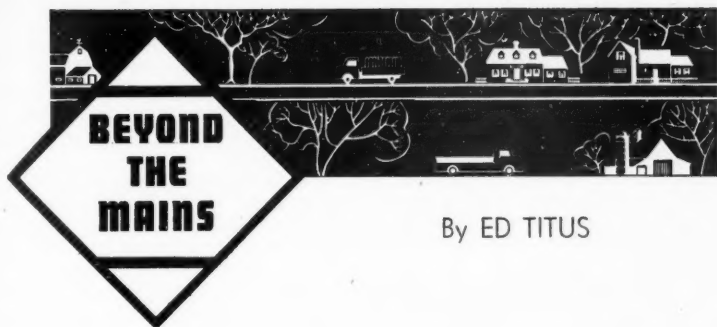
This issue should help materially in that regard. No attempt has been made to include electricity in the heating picture. It outcasts itself by its exorbitant price. Your real competition lies, first, in lack of knowledge by prospective users of the value and convenience of gas and, second, in the energy of salesmen selling oil and coal.

Articles herein fortify you to meet and overcome both.

And now, the selling job is up to you!

By Ed.





By ED TITUS

H EATING is a "hot" subject in the Northeast this warm mid-summer. Nearly everybody in the LP-Gas business in the area is talking about it, experimenting with it, or already successfully selling heating for small homes and certain kinds of commercial installations.

In an industry that's full of challenges, and full of good old-fashioned American opportunity for the individual to get ahead, heating is one of the current opportunities. But heating presents a situation in which careful planning is essential.

Most of the operators in the Northeast who are successfully selling propane heating are doing it by presenting it as the quality fuel, costing a little more perhaps, but cleaner, more dependable, more trouble-free. With proper controls it gives just the right amount of heat automatically and immediately as it's needed, and doesn't waste heat when it's not needed.

It appears, however, that some in the Northeast have figured out ways to show certain prospective purchasers that LP-Gas heating will cost them no more money, or may even save money in some instances.

For instance, as recounted in the general survey article in this heating issue, one operator has sold propane heating for a development of small homes, on the ground that it would save money for the home purchasers. He proved the annual fuel bill would be no greater than heating with oil, and cooking and water heating with electricity—which was the other combination being considered.

But cost of putting in propane appliances and equipment for three purposes would be less than putting in an oil burner and electric range and water heater. So the fully equipped home cost the home owner less through use of propane.

Amount of capital needed to install central heating for competing fuels has proved a successful argument in selling propane heating for commercial purposes. As related elsewhere in this issue, this argument worked for The Fuelgas Corp., of Chester, N. Y. in selling installations for a large surplus store, out on a highway, and a commercial garage. It often would take six or seven years for the operator of a restaurant, store or factory to make up the excess cost of a central heating installation with a competing fuel with hoped-for savings on monthly fuel costs, compared with propane. With changing business conditions, perhaps he'd be at a different location or have different requirements by then, anyway.

LP-Gas heating equipment can be put in quickly and cheaply and without fuss and bother. Through cleanliness and dependability it will build good will with employees and customers, alike.

This kind of thinking may have been behind the choice of propane heat with 4500 gallons' storage by those who took over a former movie studio in the Northeast and converted it to allied theater arts.

Another project of interest is the Lewis Gardens apartment house development, where LP-Gas serves for all four purposes—heating, water heating, cooking and refrigeration—and the price is competitive with oil and other fuels, enabling an estimated average \$15 a month bill year-round for the four uses.

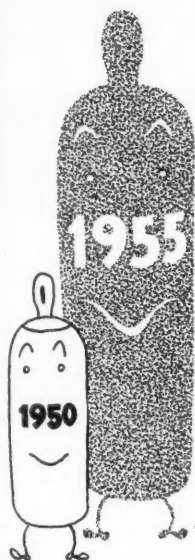
This development, outside Richmond, Virginia, is described in an article on heating plans and operations of Bottled Gas Corp. of Virginia, in this issue.

Various economies are achieved there, partly by piping the gas from a bulk plant on the outskirts to each apartment; partly through the sliding scale of rates which gives an advantage to the consumer using LP-Gas for all uses.

It is good that operators in the Northeast apparently are proceeding with reasonable caution and good advance planning in building up the heating load. Everyone seems to be bearing in mind necessity for adequate supply and adequate storage to take care of all heating customers.

Another point is need for adequate capital, since each heating customer added means the operator must have more capital for equipment, accounts receivable, gas inventory in the field, etc.

The big constructive angle of the heating picture in the Northeast is the consumer satisfaction, once an LP-Gas heating installation starts to function in a home. And as one Connecticut operator points out in this issue, neighbors flock in to see the new system the way they do for a television set.



SELL THE HOUSE HEATING MARKET

Now that increased refining facilities have adequately solved the fuel supply problem, there is no valid barrier to the building of a large house heating load.

It is estimated that 6,500,000 homes and farms use LP-Gas. Of these, about 2,000,000 use the fuel for house heating; these users represent a good market for replacements and unit installations requiring larger storage. The difference (or 4,500,000) comprises those users who are already acquainted with the fuel, and so forms a natural backlog for future heating business. In addition there is a large market potential for commercial heating. The market consisting of those heating with competitive fuels can be sold wherever the price differential is within reason.

A heavy proportion of the present market is located in the southern one-third of the United States, with the greatest recent expansion occurring in the Midwest and the Atlantic and Pacific seaboard areas.

In the past few years the LP-Gas market has accounted for approximately 12% of the small gas-fired space heaters manufactured. In the larger units, LP-Gas absorbed only 3% of the output. In both of these categories lie the bright house heating future for LP-Gas. These percentages should rapidly increase as more and more domestic and commercial prospects learn of the convenience, comfort, and reliability of LP-Gases for all heating purposes.

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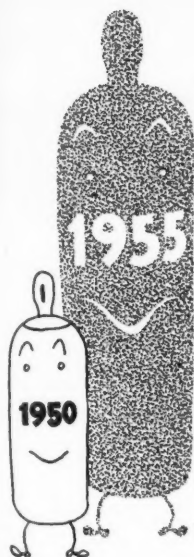
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Various economies are achieved there, partly by piping the gas from a bulk plant on the outskirts to each apartment; partly through the sliding scale of rates which gives an advantage to the consumer using LP-Gas for all uses.

It is good that operators in the Northeast apparently are proceeding with reasonable caution and good advance planning in building up the heating load. Everyone seems to be bearing in mind necessity for adequate supply and adequate storage to take care of all heating customers.

Another point is need for adequate capital, since each heating customer added means the operator must have more capital for equipment, accounts receivable, gas inventory in the field, etc.

The big constructive angle of the heating picture in the Northeast is the consumer satisfaction, once an LP-Gas heating installation starts to function in a home. And as one Connecticut operator points out in this issue, neighbors flock in to see the new system the way they do for a television set.



SELL THE HOUSE HEATING MARKET

Now that increased refining facilities have adequately solved the fuel supply problem, there is no valid barrier to the building of a large house heating load.

It is estimated that 6,500,000 homes and farms use LP-Gas. Of these, about 2,000,000 use the fuel for house heating; these users represent a good market for replacements and unit installations requiring larger storage. The difference (or 4,500,000) comprises those users who are already acquainted with the fuel, and so forms a natural backlog for future heating business. In addition there is a large market potential for commercial heating. The market consisting of those heating with competitive fuels can be sold wherever the price differential is within reason.

A heavy proportion of the present market is located in the southern one-third of the United States, with the greatest recent expansion occurring in the Midwest and the Atlantic and Pacific seaboard areas.

In the past few years the LP-Gas market has accounted for approximately 12% of the small gas-fired space heaters manufactured. In the larger units, LP-Gas absorbed only 3% of the output. In both of these categories lie the bright house heating future for LP-Gas. These percentages should rapidly increase as more and more domestic and commercial prospects learn of the convenience, comfort, and reliability of LP-Gases for all heating purposes.

Sell 'em



n Comfort

The American Gas Association's house heating campaign entitled, "Sell 'Em Comfort," scheduled for the months of July, August, and September, is designed to help dealers increase the volume of their heating business. It anticipates the peak selling months of August, September, and October. The American Gas Association challenges dealers to do an enlightened selling job which includes providing the right equipment for the right job to insure customer satisfaction and a growing list of prospects.

H. Vinton Potter, Coordinator of Promotion, has outlined these four objectives for the "Sell 'Em Comfort" campaign:

1. Put your house in order. After a careful survey, poorly designed and unsatisfactory installations should be resized and changed over. A dissatisfied customer will work against you.
2. Replace worn out and non-automatic equipment. Improved engineering and design make possible the replacement of outdated equipment. The customer should be sold on the advantages of a completely automatic system.
3. Sell to present customers who do not use gas for heating. This is the most logical market because it is already sold on gas as a fuel.
4. Sell equipment to new users. Here is the big opportunity to increase your heating load. Now is the time to sell the advantages and reliability of LP-Gas to those who heat with competitive fuels.

Short Cuts To Selling

By CARROLL WILLIS

Siebert & Willis, Inc., Wichita, Kansas

The author states that you can develop a good house heating load against competition if you—

1. Sell good, modern equipment; install and service it properly.
2. Sell comfort and convenience; not price and trouble.
3. Set up your fuel price schedule to encourage larger storage.

Most people don't buy automatic gas heat because it's cheaper. The great national preference for gas heat may be traced to several factors: convenience, less muss and fuss, entirely automatic, etc. Yet, with all of these advantages, the cost of LP-Gas is not beyond the reach of the average family income.



CARROLL WILLIS

Families are more interested in about how much it will cost them to heat with LP-Gas than in a cost comparison with other fuels.

House-heating requires widely varying amounts of LP-Gas, depending on:

1. Average outside temperatures during the heating season.
2. Size, construction and insulation of the house being heated.
3. How many rooms of the house are heated and how warm those rooms are kept.

These varying factors make it practically impossible to estimate the fuel that any one individual home will use. However, it is possible to obtain the average of several thousand homes in any locality.

The Weather Bureau has figures showing the variation from a base temperature of 65° for each hour of every day. For example, if the high reading on a fall day were

TABLE I
"DEGREE DAYS" AT
TWO KANSAS POINTS

	Wichita	Goodland
Sept., 1945	45	169
Oct.	227	354
Nov.	517	726
Dec.	1153	1205
Jan., 1946	926	1098
Feb.	591	818
March	352	644
April	159	296
May	136	356
TOTAL	4106	5666

50° and the low reading that night were 40°, the average (they call it "mean") temperature would be 45° for that day. The difference between the "mean" temperature of 45° and the base of 65° is called 20 "degree days."

It is on the basis of "degree days" that heating engineers calculate the amount of fuel required to heat a home.

By studying a long period of accumulated statistics the gas utilities have found that the average of several thousand Kansas users requires the equivalent of approximately one-fourth gallon per degree day for house heating alone.

Thus the average of several thousand homes near Wichita, Kan., would show a usage of around 1026 gallons of LP-Gas for heating, whereas the average around Goodland, Kan. (in the northwest part of the state) would be around 1416 gallons for house heating only.

Wide variations in climate from year to year and variations between adjacent areas make it impossible to use the degree day sys-

tem as an infallible yardstick for figuring costs. However, the result so achieved is a satisfactory approximation. Table 1 shows the marked variation of two localities in Kansas for the period beginning Sept. 1945, and ending May 1946.

Figure 1 covers the same period and the same two areas and clearly shows how fuel usage follows monthly degree day changes.

Figure 2 illustrates the deliveries necessary to an average Wichita home using 1446 gals. a year and having a 461-gal. system.

Figure 3 shows what happens to the delivery schedule when the same amount of fuel is stored in a 1000-gal. system (or two 500-gal. systems manifolded together).

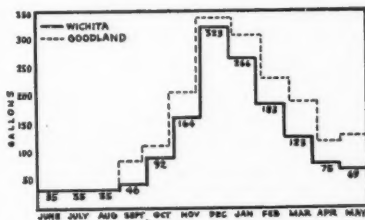


FIG. 1

A study of these charts should certainly encourage the LP-Gas operator who is interested in developing a heating load to:

1. Install larger storage facilities at the point of consumption, and
2. Reward those users who do provide this large storage with a lower fuel price than is given to customers with smaller systems. A careful study will convince any open-minded bulk operator that a heating customer lo-

TABLE 2. COST COMPARISONS

Fuel	Heat Value Btu Per Unit		Price Per Unit to Give Same Amount of Heat Per Dollar	See Notes Below
Gas	100,000	therm	.075c therm	1
Oil	140,000	gallon	.105c gallon	2
	140,000	gallon	.092c gallon	3
Bituminous	12,000	pound	\$12.37 ton	4
Coal	14,000	pound	\$14.40 ton	4
	12,000	pound	\$14.62 ton	5
	14,000	pound	\$17.00 ton	5
Anthracite	12,500	pound	\$15.22 ton	4
Coal	13,500	pound	\$16.42 ton	4
	12,500	pound	\$18.75 ton	5
	13,500	pound	\$20.25 ton	5

Notes:

1. A gallon of butane contains 102,000 Btu (a little more than one therm); a gallon of propane contains 92,000 Btu, somewhat less than one therm.
2. Unit designed for oil heating.
3. Unit converted to oil burning.
4. Hand-fired coal unit without automatic controls.
5. Hand-fired with automatic controls or stoker-fired.

To compare the costs of various fuels using the table, select any fuel and proceed as follows:

- (1) Determine its local price.
- (2) Divide the local price by the price per unit in the table.
- (3) Find in the table the unit cost of the fuel you wish to compare.
- (4) Multiply this value by the result obtained under (2). The product is the price at which you will buy the same amount of heat per dollar as with first fuel.
- (5) Compare the price for the second fuel obtained under (4) with the local price for that fuel.

EXAMPLES FOR USING TABLE 2.

Example 1.

Suppose you want to compare 12,000 Btu bituminous coal with LP-Gas. If the price of 12,000 Btu coal is \$18 per ton, at what local price per gallon will LP-Gas be cheaper for the same heating job?

- (1) In the table you will find a price per unit for 12,000 Btu coal of \$12.37 per ton, if fired by hand.
- (2) Divide 18 by 12.37 and obtain 1.45.
- (3) Now find in the table a value of $7\frac{1}{2}$ c per therm (1 gallon of LP-Gas).
- (4) Multiply $7\frac{1}{2}$ by 1.45 and obtain 11.8. If LP-Gas costs more than 11.8 cents per gallon, it will be cheaper to burn the \$18 coal. If LP-Gas costs less than 11.8c per gallon it will be cheaper to heat with gas.

Example 2.

Suppose you want to compare the cost of heating with 15c a gallon oil (used in a converted furnace) with LP-Gas:

- (1) Divide 15c by .092c (from table) and obtain 1.63.
- (2) Now find in the table the value of .075c per therm (gallon of LP-Gas).
- (3) Multiply .075 by 1.63 and obtain .122, or approximately 12.2c per gallon. If LP-Gas sells for less than 12.2c per gallon it would cost less than fuel oil at 15c a gallon and vice versa.

cated in 4000 or 5000 degree-day area should pay for fuel about as follows:

If customer has system of	He should pay for fuel
1000 gals.	"X" minus 1c
500 gals.	"X"
300 gals.	"X" plus 2c
Under 250 gals.	"X" plus 5c

The value of "X" will, of course, vary with the laid-in cost of fuel.

A careful analysis of several bulk operations revealed that some of their "best" customers (large users) were actually costing the operator money, because the customer had such a small system that 15 or 20 trips were yearly necessary to provide fuel.

Some operators are fearful of "losing business" but the wiser

heads are never fearful of "losing" unprofitable business.

In comparing costs of fuels, it is well to stick pretty closely with recognized authorities. Get copies of "Your Farmhouse — Heating"

(U. S. Department of Agriculture, Miscellaneous Publication No. 689 from Superintendent of Documents 15c).

This authoritative circular quotes from the University of

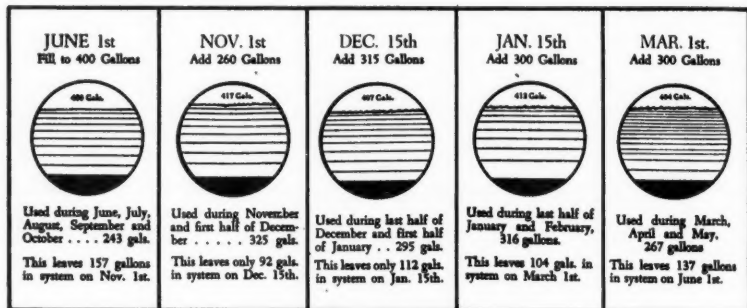


FIGURE 2. 461-GAL. SYSTEM

This is what happens when a customer system is too small for the load. Note that most of the deliveries are required in the winter months when the fuel is the most difficult to obtain and when road conditions make transport the most expensive. Only 19% is delivered during the summer months.

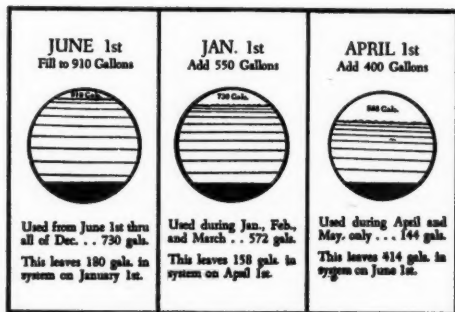


FIGURE 3. 1000-GAL. SYSTEM

This is what happens when a customer using the same amount of fuel and with the identical fuel load per month, as charted in Figure 3, has a 1000-gal. system. Note that only one winter delivery of 550 gals. is necessary, the remaining gallonage, or 63%, being delivered in the summer.

YOU CAN OUTPOINT ELECTRICITY



HEAT GENERATED BY
ONE KILOWATT-HOUR.



HEAT GENERATED BY
ONE GAL. OF LP-GAS

Mother Nature put 3412 heat units (Btu's) in 1 KWH of electricity; between 90,000 and 100,000 Btu's in a gallon of LP-Gas. Even figuring 100% efficiency for the electricity and only 70% or 80% efficiency for LP-Gas, it is obvious that LP-Gas could sell for 20 to 30 times the price of 1 KWH of electricity and still be highly competitive. Because of this fundamental weakness, electrically heated homes are still a matter of conjecture in the Sunday tabloids.

Illinois (Small Homes Council Circular Series G3.5) so that you automatically have two authorities backing the figures in Table 2.

In summary, an LP-Gas operator can develop a fine heating load against competition if he will:

1. Sell good modern equipment, install it well and service it properly. A poor installation will "botch up" the finest equipment.

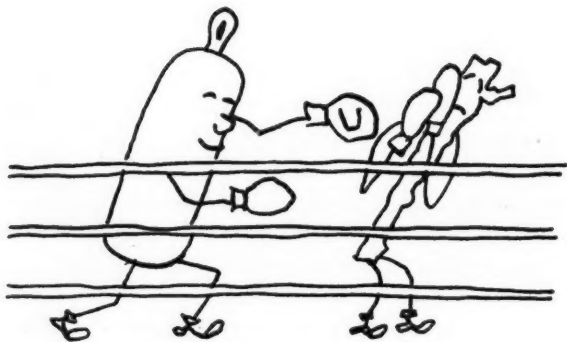
2. Remember that people are buying comfort and convenience; not "price" and trouble.

3. Determine the number of degree days during the past several years. From this, approximate the "average" yearly consumption of LP-Gas.

4. Be sure that your customers have adequately sized systems and set up your fuel price schedule to encourage larger customer storage.

Acknowledgement is given to the Kansas LP-Gas Assn. pamphlet "LP-Gas in Your Home" for the use of certain information and charts used in the preparation of this article.

WOOD

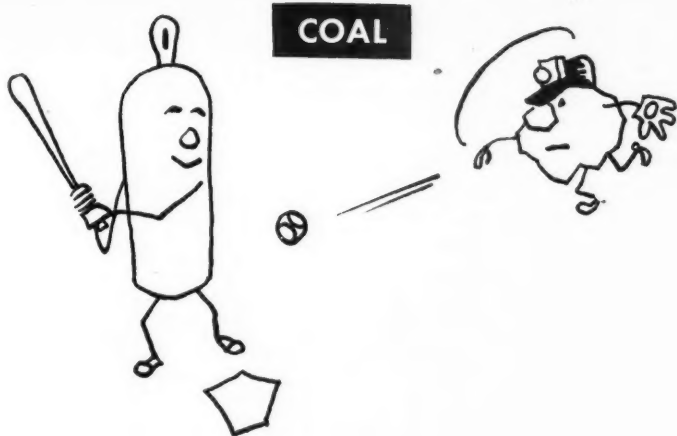


YOU CAN KNOCK HIM OUT

Believe it or not, the pot-bellied wood-burning space heater still is "The Champ" in farm and rural areas where second and third growth timber is plentiful. This extensive house-heating market has too often been ignored.

The "woodburner" lives in an average family of four in a six-room house. He uses wood in the kitchen stove, and in a parlor heater or one-pipe furnace. He heats his home eight months of the year if he lives in the northern United States. To talk to him you have to speak his language. He belongs to an age-old economy. He is not friendly toward "your confounded gadgets." If you can outthink him on the economy level, you have won the first round.

First estimate the cost of doing the job with LP-Gas, then figure what it is costing him now with wood—and include **all** his costs: the number of cords per year, hauling, new linings and new grates, new stove pipe, pointing up the chimney, taxes on woodland, sawing, splitting, etc. Remember that in wood he has the greatest fire hazard of any fuel and that its high heating point is the most destructive of heating equipment. If you can handle the job near his current costs, throw every punch you've got (He can't lay a glove on you at this point). **SELL HIM COMFORT!**

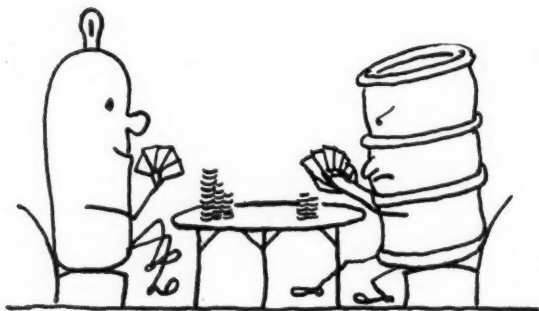


BOOST YOUR BATTING AVERAGE

The "coalburner" no longer thinks he is licking the high cost of living in the heating department. John L. Lewis, Peck's bad boy of the coal industry, is responsible for this. His price-raising tactics have mushroomed gas conversions and new gas business to the point where the LP-Gas dealer selling convenience and reliability can compete in the same league with coal in many localities. Today you can take a lot of space heating from venerable old King Coal and save money for the customers.

Your comparative cost tables will help you here. (See "The Bottled Gas Manual," published by BUTANE-PROPANE NEWS). Here, again, remember the incidental expenses: frequent cleaning of flues, pipe replacements, pointing up the chimney, ash removal, replacement of grates and linings, excessive depreciation of appliances, cost of papering and house painting, etc. The disadvantages of coal are longer than a pitcher's sore arm. The "coalburner" will throw you crimples. Hit him all over the park. Don't forget the hazards to health: danger from coal gas; the danger of fire from live coals, overheated flue pipes, and coal gas explosions; the dirt and dust; the difficult and heavy firing; and the adverse effect of variable temperatures. **SELL HIM COMFORT!**

OIL



YOU HOLD A STRONG HAND

The oil heater is characterized by high flue temperatures, drafts, odor, and low efficiency—the efficiency rating dropping sharply after a short period of use. Fuel cost comparisons are not encouraging to the LP-Gas dealer. Each application of oil to house-heating is a separate problem. You will be on the defensive and have to make your own breaks. The key to cost competition here is the controllability of the LP-Gas flame. It is possible with less input to do the same heating job with thermostatically controlled gas by the proper installation and selection of equipment, and the elimination of waste heat by balancing the particular heat needs of each room.

Here again comparative fuel costs don't freeze you out of the play. You hold a strong hand and need to squeeze every trick. The oil heater requires frequent burner cleaning, and for the sleeve type—frequent replacement of wicks and parts replacements due to warpage from excessive heat. The automatic draft requires frequent service adjustments. Remember the danger of flue fires, the danger of fire from spillage or leakage or from a flooded burner; and the danger of producing carbon monoxide gas. Remember the combustion troubles due to atmospheric conditions, dirt in the fuel, or a dirty burner. Remember the unavoidable dirt and mess. Stay on your toes. **SELL THEM THE CONVENIENCE AND COMFORT OF LP-GAS!**

Dealer "Sells 'Em Comfort" To Build Commercial Load

By MORRIS BIRNBAUM

Plant Manager, The Fuelgas Corporation,
Chester, N. Y.

THE Fuelgas Corp., which operates in southern New York and parts of Pennsylvania and northern New Jersey, has proceeded gradually into the heating field.

We have a fair number of commercial heating installations, and the operation of these is proving that propane heating in this northern climate is economically sound.

We also have some domestic house heating installations.

So far we are not convinced that under present systems, we can get our costs down to the point where we can compete dollar-for-dollar with other fuels. In our selling we tell the consumer frankly that there will be a 15% to 20% differential in cost. We sell on the basis of cleanliness, efficiency, safety, and ease of operation.

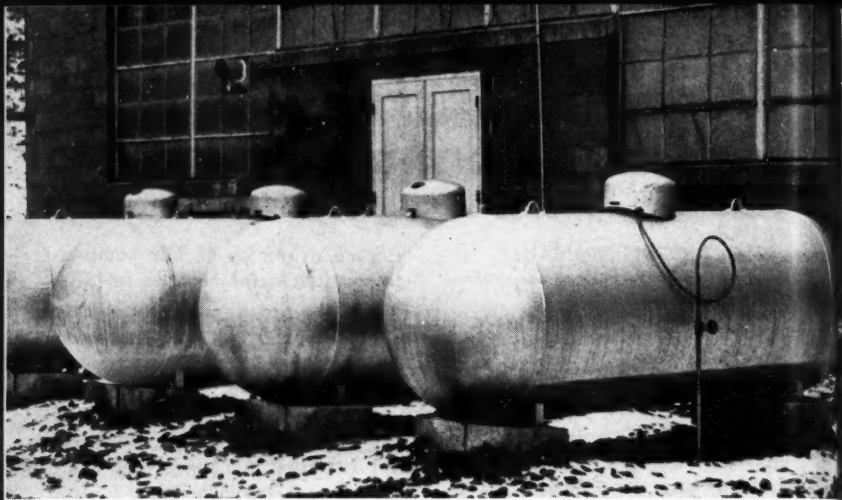
But high installation cost of central heating with other fuels is another argument that favors propane.

Some examples of our commercial or industrial heating installations follow:

1. A former, old movie studio, now converted to allied theater crafts. There are two main parts to this structure. One part is 120 feet long, 80 feet wide, and 35 feet high. Another part is of the same length and breadth, and 9 feet high. The second part is devoted



The Chester, N. Y., fire department thinks well of LP-Gas. The 500-gal. tank shown here provides fuel for this firehouse.



ABOVE: Four 500-gal. propane tanks used for heating a Fuelgas installation at a smelting company's factory in Stroudsburg, Pa. **BELOW:** This 500-gal. propane tank provides heat for a Chester, N.Y., printing plant.



to painting, paint-mixing, etc. In addition there is a basement.

For this entire job we installed sixteen 85,000 Btu Bryant suspended heaters. There is 4500 gallons storage, and consumption of gas runs to about 2000 gallons a week.

Two of the heaters are in the basement, along with de-humidifiers. This equipment serves to prevent rotting and mildewing of curtains and backdrops.

In the room with the 35-foot ceiling, the problem of driving the heat down was met by installing fans in the ceiling.

2. We have a 500-gallon tank installed for supplying heat to a retail surplus store out on a highway. This store uses 2500 to 3000 gallons each heating season. Five Bryant suspended heaters of 85,000 Btu's each do this job. They are thermostatically controlled. It gets down to 12° below zero in this country, and the above equipment is adequate for this store in the coldest weather experienced. There are 42,500 cubic feet of space in this store, which has a first and second floor.

In selling this job, we used the amount of capital outlay necessary to put in a heating system with a competing fuel as an argument, and this same argument has proved effective in selling other commercial jobs. It was found with this store that the excess cost of a central heating installation would about equal cost of six or seven years' supply of propane fuel. In other words, by deciding on LP-Gas heat with suspended heaters,

the proprietor in effect got his fuel free for this period.

3. Similar reasoning to the above convinced a fuel oil dealer in Chester, N. Y., to use propane to heat a commercial garage which he operates. The slightly greater cost of gas fuel compared with oil fuel was insignificant, when stacked up against the cost of a central heating system. A 200,000 Btu Reznor heater was installed in the garage, which has 15,000 cubic feet of interior.

4. A trucking company in Middletown, N. Y., heats its office, with 6500 cubic feet of interior, with a 65,000 Btu Bryant suspended heater. The equipment is giving satisfaction, and the customer has told us he wants to install propane heat for another larger building.

For commercial purposes, suspended heaters are a favorite with

NO HEATING LOAD FOR ELECTRICITY

The cold fact is that extensive electric house heating is impossible under present conditions. On the other hand, some American homes are being heated electrically . . . and such heating is practical under certain conditions. But mark the limitations!

In sections where low cost power is available, as in the TVA and Bonneville areas, some homes are heated by electricity. Elsewhere, a few homes are heated electrically.

In most areas, heating by electricity will usually cost more than by other methods. Where power costs the consumer 1½ cents per kilowatt-hour, house heating costs from two to three times as much as by other methods.—Rural Electrification News.

us because of high efficiency and ease of installation.

We have found quite a good market for floor furnaces in resort areas where people owning camps want quick heat on cooler evenings, and on wet, rainy days in August and September. This market exists in the Catskill and Ramapo mountains of southern New York state and the Pocono mountains of eastern Pennsylvania.

Six-Room Limit

We do not attempt to heat a home of over six rooms. On anything larger the dollar gap between the cost of ours and of competing fuels widens.

An example of a domestic heating job we recently installed is in a modern new five-room home in Cornwall, N. Y. Central heating is provided by a Bryant winter air conditioner with normal hourly output of 68,000 Btu's and normal hourly input of 85,000. The system has Minneapolis-Honeywell thermostatic controls. Hot air is carried by ducts to six registers.

Another recent installation provided forced air floor furnaces in a group of 11 new 5-room houses.

We have installed a dozen hot water house heating jobs using Burkay heaters. We also have put in two or three radiant type heating jobs and have found them very efficient.

While we have a large cylinder distribution business for other purposes, our commercial and house heating jobs with few exceptions have tank storage fa-

cilities of from 500 to 5000 gallons. All heating installations have automatic controls with safety pilots.

We have two bulk plants, at Chester, N. Y., with 66,000 gallons storage, and Moosic, Pa., with 30,000 gallons.

Phillips Establishes Group For Research Planning

K. S. Adams, president of Phillips Petroleum Co., Bartlesville, has announced the establishment of a research planning board as part of his company's research and development department to facilitate long-term planning of the department's program and to improve its coordination with all company activities.

Board members—R. C. Alden, chairman, T. R. Hudson, W. A. Schulze, and K. H. Hackmuth—will report to G. G. Oberfell, vice president of the department, through R. W. Thomas, department manager.

Several changes in the department have been made. P. M. Arnold is the new assistant to the manager. R. L. Doan has become director of the research division, assisted by T. W. Legatski and J. A. Reid.

W. B. Reynolds has been appointed assistant director in charge of chemicals and rubber; F. W. Crawford is assistant director in charge of production and physics branch; and D. E. Carr is in charge of combustion and lubrication branch.

An administration and personnel branch in the research and development department has been formed to serve the four departmental divisions—research, patent, chemical engineering, and chemical products. L. C. Morris is in charge, assisted by R. R. Couch.



Gas is Getting Firm Foothold For Heating in Northeast

By ED TITUS

A SURVEY of LP-Gas operators in the Northeast reveals a steady increase in house heating installations. Among those whose house heating loads are negligible there is noted an increased interest in a workable approach to the problem.

Since in the Northeast propane is a little more expensive than in other parts of the country, it must usually be sold as a quality fuel. Still, it is going over well in certain areas of the cold northern climate for entire heating of small homes. It is proving its worth in some places for commercial heating in a variety of establishments. It is becoming more and more popular for heating resort camps and cabins.

An example of potential commercial heating (or is it agricultural?) is had from a study being conducted of propane for heating tobacco barns in the Connecticut river valley in New England. This

valley, which is more of a tobacco raising center than most of the country realizes, can sometimes be damp in the fall. Moisture condenses and rots the tobacco. Perhaps propane heat will be the solution.

How is the LP-Gas operator in the Northeast going to combat the fact that his fuel is usually a little more expensive than competing fuels?

Elsewhere in this issue there are presented three case studies of operations in the East—one in Connecticut; one in Pennsylvania, New Jersey and New York; and the third in Virginia.

Two of these operators are successfully selling propane heat with the frank statement that it is a little more expensive, but on the basis that it is dependable, clean, safe and trouble-free.

And by thorough study of the figures, it can sometimes be shown

that propane will save money in certain situations, one way or another.

For example, the builder of a housing development of small single homes was considering oil for heat and electricity for cooking and water heating. Due to the efforts of a skilled LP-Gasman, who presented the facts forcefully and clearly, the builder decided on propane for all three purposes, the heating of each entire house being handled by an LP-Gas floor furnace. The homes were small ones, selling for \$7000 or less and had about 6000 cubic feet of interior and no cellar. It was figured the excess cost of propane over oil for heat would be about balanced by excess cost of electricity over propane for the other uses. This resulted partly from bringing down the cost of propane for cooking and water heating through the fact that householders got a lower rate due to using it for heating, too. A 100-gallon propane tank was placed outside each house.

Equipment Saves Money

But the saving to the purchaser on this proposition came from the fact the price of the fully equipped home was less with propane appliances and equipment installed than it would have been with competing fuels.

Doubtless other builders will be influenced by similar presentation of the facts. One advantage of going after the heating load is that with LP-Gas in for heat, the other appliances should sell themselves automatically, especially since use

of propane in quantity for heat lowers the rate charged for the gas for the other purposes.

Suburban Propane Gas Corp., with bulk plants in the Atlantic Coast states from Massachusetts to Maryland, is in the heating field on an experimental basis. They are trying various equipment, including forced air circulators, floor furnaces and central heating plants of various kinds. They are experimenting in both the residential and commercial fields.

Balances Resort Load

Another operator is finding that selling propane for heating small homes in the winter is providing a balance for heavy summer load serving seashore restaurants which have tank storage.

Roy R. Johnson, vice president of Fuelane Corp., Liberty, N. Y., which covers a considerable area of the Northeast, reported his company had just called a meeting to discuss heating. Mr. Johnson is interested in development of heating business in the right manner.

Walter Hoagland, of Fisher Governor Co., considers the LP-Gas heating picture bright in New England and other parts of the Northeast. His observation is that an increasing number of heating installations are being put in, and he believes the field will continue to represent a good opportunity.

H. Emerson Thomas, of H. Emerson Thomas and Associates, Westfield, N. J., voices a word of caution on the subject of heating. He considers it a good load in many ways, but believes that there must be a

compensating summer load. He feels that the fact that certain operators in the Northeast consider it advantageous to build up winter heating loads to balance a summer resort load is only a local view of the picture, and points out the biggest supplies of gas come from the Southwest where there is a very large winter heating load, and there are heavy demands for gas in that season.

Problem of Storage and Supply

Franklin Fetherston, vice president of the Liquefied Petroleum Gas Assn., believes that adequate storage and supply of fuel over the years are the big subjects to consider in appraising the future of LP-Gas heating in the Northeast.

Another substantial Eastern operator feels that propane is too high priced in the Northeast at this time for his company to make much effort about selling heating for entire houses. He finds an increasing market, however, for propane for auxiliary heat and for cabins. His company puts in a 125-gallon tank for a medium sized cabin and up to 400 gallons for a large one.

A medium sized operator reports he is doing well installing floor fur-

naces in four-room homes, but believes the cost of propane makes it impractical to sell for heat in larger homes.

At least one company is reported doing well putting in heating installations on Cape Cod, famous resort and seagoing area of Massachusetts.

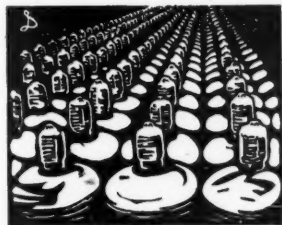
Another large organization covering the Northeast reports that house heating sales are gaining slowly, and this organization is doing nothing to push it. The question of what to do about house heating is up to each dealer of this organization.

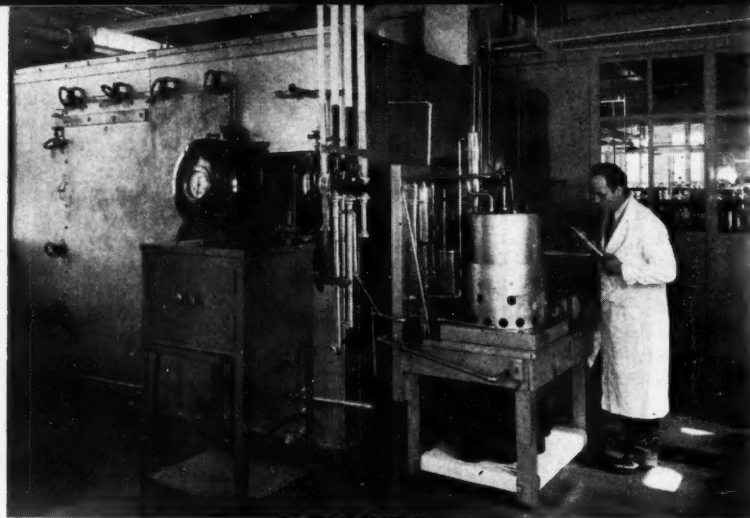
The representative of still another large company reports that in two or three areas in the Northeast propane house heating is being received with great enthusiasm.

The New Home Market

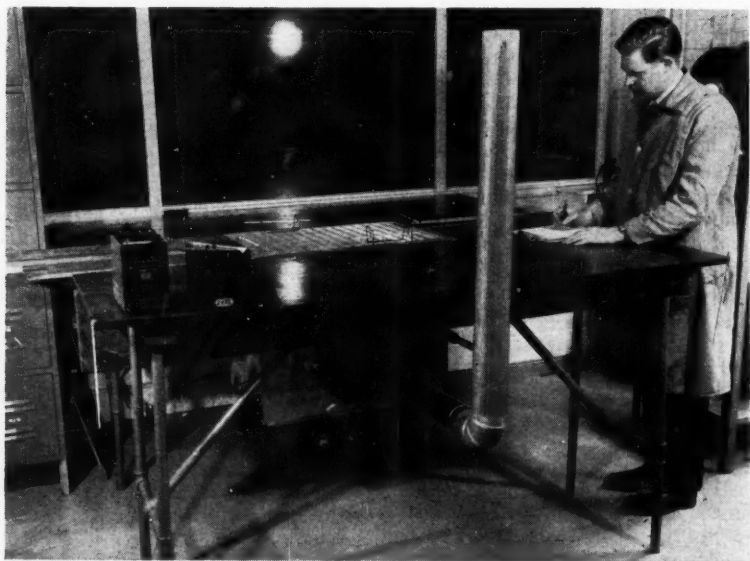
While his company is not pushing the sale of heating particularly, he believes there is a growing market in the Northeast in new homes selling from \$9000 to \$9500, and having no basement. If an oil burner goes in, it means perhaps \$1000 added to the purchase price for the heating system, plus the necessity for a basement if the job is done right. On the other hand, a satisfactory LP-Gas floor furnace can be bought and installed for a few hundred dollars. The extra cost is of great importance to most small home purchasers today.

All in all, the propane heating picture in the Northeast is a fast moving one, and a picture which progressive operators are following closely.





Closed room for testing combustion of room heater.



Checking floor furnace temperatures at points of surrounding joists.

AGA's Approval Seal Builds Customer Confidence

By EDWIN L. HALL

Director, American Gas Association, Inc.,
Laboratories



BEHIND the Laboratories Approval Seal of the American Gas Association is the cumulative manufacturing and operating experience of the years. The Approval Plan, adopted as a means of safeguarding the operation of gas appliances and making them such that they will give the customer satisfactory performance, is now in its 25th year. As a result, a wide variety of tested and approved models of various types and designs are available to users of gas fuel. All can be readily identified by display of the Approval Seal.

Over these years the industry has established these points essential to safe and satisfactory operation of gas appliances and learned where the pitfalls and trouble spots are likely to be

found. It not only has established a nationally recognized testing agency for administering the Approval Plan; but it has created an effective national organization of experts to formulate and keep up-to-date the standards or approval requirements upon which testing procedures are based.

These experts contribute to the program the experience and interests of many groups—utilities, manufacturers, consumers, governmental agencies and trade organizations, groups daily concerned with current practices in the field and future trends. The requirements program, which they administer, also is directly affiliated with the American Standards Association. Consequently, appliance requirements prepared and sponsored by the gas industry are approved

By Testing Gas Appliances to Make Certain They Are Built Right and Will Work Right, the American Gas Association Performs an Invaluable Service to Dealers and Public, Alike

and adopted by that organization as American Standard.

Thus the Laboratories Approval Seal on a gas appliance has real meaning and significance for the consumer. It is a badge of integrity, signifying that the manufacturer has met all basic requirements for safety, substantial and durable construction and satisfactory performance. It indicates that the appliance measures up to these basic concepts, set and agreed upon by the outstanding authorities in the field.

Proper Installation Vital

Before discussing some of the actual tests for heating equipment, one most important point in addition to AGA approval of the unit should not be overlooked by consumers and dealers. That is proper installation. Approval, alone, does not have too much significance if a poor installation is made or if all the elements of a good installation are not included. AGA requirements specifically covering the installation of piping and appliances in buildings should be followed as well as all local code provisions. In many localities local codes are largely based upon the AGA installation provisions.

Construction of an appliance, the materials used, and the methods of fabrication and assembly, are carefully checked at the Laboratories. Since industry requirements are based upon providing safe operation of the appliance, not only initially, but throughout its reasonably expected life, details of its construction are important.

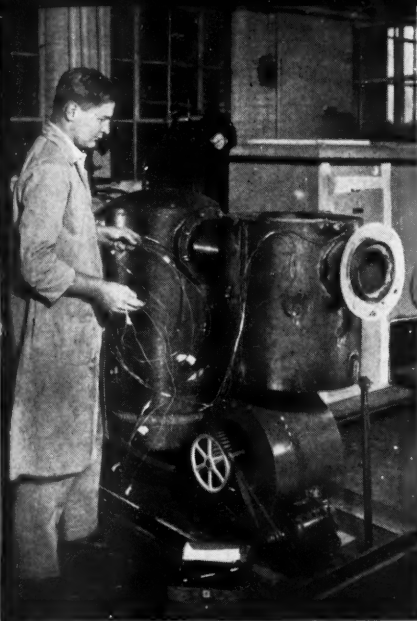
They are also important in providing means for such field adjustment and servicing as may be necessary for continued safe operation. Here experience counts heavily. Construction checks based upon field experience can eliminate repetitive, needlessly long and involved performance tests.

Such points as burner construction, position of pilots, use of accessory equipment such as pressure regulators, control valves, automatic pilots, limit and fan controls, and details of electrical wiring and equipment are covered in construction requirements. These are common to most heating appliances such as furnaces, boilers, floor furnaces, unit heaters, attic type furnaces and recessed heaters.

Burners Get Special Attention

Burner joints must be gas tight and not depend upon cement or sealing materials for mechanical strength or primary tightness. Fixed alignment of burners for proper operation is necessary. Burners also must be readily removable and at the same time secured so that they cannot fall or jar out of position. Pilots must be installed in a fixed position relative to the main burner so that they may be easily seen, safely lighted and readily removed. Similar provisions apply to other accessories and component parts of a complete unit.

Each type of appliance has its own individual requirements which differ with the design features unique to it. Consequently it is neither possible to cover details, except at great length, nor to



Thermocouples locate hot spots on warm air furnace heating element.

generalize too much about points of similarity. A few specific examples, therefore, may best illustrate some of the points that have been found by experience to be essential to the aims of the approval plan.

Cast iron and steel boilers must comply with applicable provisions of the ASME boiler code and have approved safety devices. Furnaces having sheet metal heating elements must possess the strength, rigidity, durability and resistance to corrosion equivalent to that of No. 20 US standard gauge steel. Satisfactory joints to keep flue products from mixing with the warm air discharged by the fur-

nace are mandatory. Forced air furnaces are required to have limit controls to prevent outlet air temperature from exceeding a safe figure.

Manually operated floor furnaces must have a positive means to prevent opening the main burner valve without the pilot valve first being in the full open position. This provides for safe lighting since floor furnace burners are not always readily accessible from the space being heated.

Vented recessed heaters, installed in building walls, must be constructed so that no portion of the flue gases issuing from the draft hood relief opening in the event of a blocked flue or chimney downdraft will discharge into walls, floors or ceilings.

Actual operation of appliances through a series of performance tests at the Laboratories cover such major considerations as good combustion, proper operation of burners and pilots, safe surface temperatures on surrounding building structures, heating element durability and thermal efficiency of the appliance.

A number of the performance tests, notably those for good combustion, are performed under conditions that may occur in the field. The appliances are operated at various test pressures and under conditions of updraft and downdraft. They are also operated on various test gases and their flexibility in regard to pressure variations and adverse adjustment determined. The only changes allowed for operation on different gases are in the burner equipment

and orifices used and the adjustment of primary air.

Room heaters are subject to a "closed room" test in addition to the regular open room test for good combustion which all types of appliances must meet. They are placed in a tightly sealed enclosure, and are operated until the oxygen content of the enclosure falls to 15.1%, at which time the carbon monoxide content of the room air must not be more than five-hundredths of 1%.

Operational characteristics of burners and pilots under a variety of conditions are carefully checked. They are observed for flashback on both ignition and turndown. Flames must carry over to all burner ports when the combustion chamber is both hot and cold. Ignition of burners by pilots must be positive and rapid and pilots must not extinguish during any of the tests or show evidence of carbon deposits or deterioration.

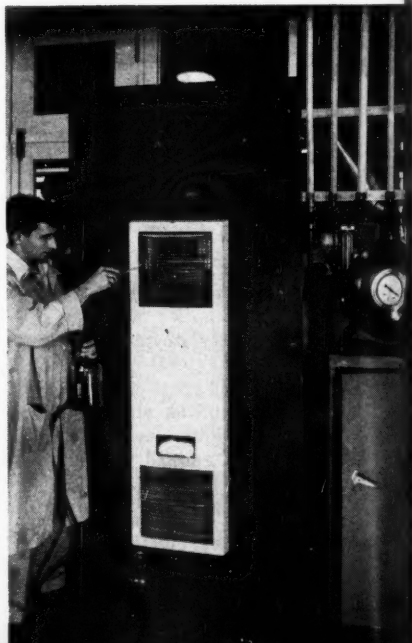
Quick shutoff of the main gas supply in the event of failure of automatically controlled appliances is highly important. Consequently automatic pilots are not only thoroughly tested in operation but must be so constructed that they fail safely. They meet this requirement, for instance, if they are maintained in an open position by springs or other means which upon failure would automatically bring the device to a closed position. In the case of LP-Gas operated appliances, complete shutoff of all pilots as well as all burners is mandatory.

Temperatures produced on sur-

rounding building structures is another important item thoroughly checked. Maximum temperatures attained by flue gases and outlet circulating air likewise are important. The main objective is to insure that in no case will combustible building structures exceed safe temperatures as the result of operation of the appliance. The actual tests imposed on the various classes of heating appliances naturally differ somewhat.

For example, conventional furnaces and boilers are tested with a 6-inch spacing to side and back combustible walls. Maximum tem-

Taking combustion sample for wall heater.



perature on walls must not exceed 90°F above room temperature at the time of test. A similar provision holds for floor temperatures in cases where the unit is designed for erecting on combustible floors.

Recent architectural trends away from homes with basements have created the desirability of installing both furnaces and boilers with clearances of less than 6 inches to combustible walls. Consequently, new standards have been adopted.

Excessive temperatures and failure of an appliance to heat up quickly from a cold start are two causes that affect the durability of a heating unit to a great extent. Excessive temperatures, above 875° for mild steel, cause heating elements to scale at an accelerated rate. All external surfaces of heat exchangers are therefore held to a maximum of 875° under continued operation.

Slow heating up of the unit to beyond the dew point of flue gases allows condensate to collect on heating surfaces and promotes corrosion. Consequently furnaces, floor furnaces, and recessed heaters are required to have all heating elements in contact with flue gases attain a temperature of at least 178° with a specified time ranging from 15 to 20 minutes, depending on the ambient temperature. This appreciably minimizes the chances of condensation forming.

Satisfactory performance of any heating unit, of course, requires that it will do the work expected of it. Consequently minimum thermal efficiencies are required of the various types in keeping with their

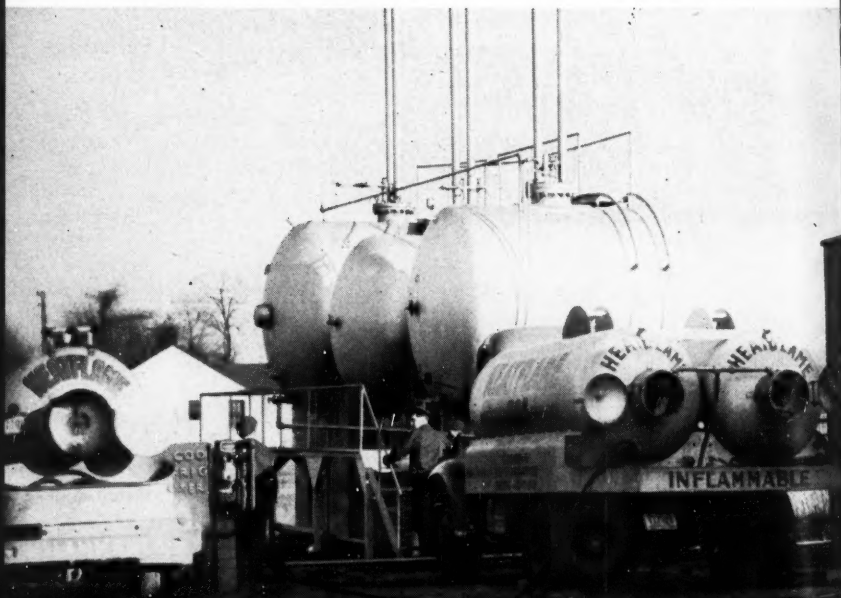
ability to perform. Gravity warm air furnaces are required to have a minimum efficiency of 70%. That of forced air types is 75%. This figure also applies to unit heaters. Floor furnaces of the gravity type must be at least 65% efficient and fan type units 70%. Small room heaters are required to be 65% efficient while those of larger input rating are required to be 70%.

The various tests and requirements outlined here are those that are currently in effect and cover some of the major items. The requirements for various classes of appliances are revised by the subcommittees of the main Approval Requirements Committee for each class of appliances as activities and developments in the field dictate. They are then reviewed by the industry and all interested parties and are then returned to the subcommittee for consideration of the comments. The standards as finally developed by the subcommittee are sent to the Approval Requirements Committee and upon adoption are ready for approval by the American Standards Assn.

Appliances approved at the Laboratories at any time must meet the current standards. Approval may be renewed annually for a period of five years. After five years, appliances must be retested under the latest requirements in effect. In this manner standards for gas appliances are kept up-to-date, as well as keyed to technical developments and field experience, while appliances being marketed are required to keep pace with technological developments.



ABOVE: General air view of bulk plant, head offices, etc., of Bottled Gas Corp. of Virginia at Richmond. BELOW: Storage tanks and two of the trucks which operate out of bulk plant at head offices of Bottled Gas Corp.



Build Heating Load Slowly!

STAFF WRITTEN

FOLLOWING a winter of successful experimentation with various kinds of house heating, the Bottled Gas Corp. of Virginia is getting ready to expand this business during the coming heating season.



E. O. N. WILLIAMS

The company is hiring two salesmen - engineers, recent college engineering graduates.

These men are receiving an intensive five-weeks' training in the LP-Gas business.

Details of the company's plans about heating were explained to *BUTANE-PROPANE News* by E. O. N. Williams, president of the company, and member of the board of directors of the Liquefied Petroleum Gas Assn., as a service to the rest of the industry.

Mr. Williams stressed the need of making careful financial calculations by those operators entering the heating business for the first time.

It is well known that some operators have gotten themselves into difficulties, financial and otherwise, by taking on too much new business too fast, and often without adequate capital.

Bottled Gas Corp. of Virginia is moving into the heating picture by a series of logical steps. The company is planning the financial end of the heating expansion carefully. Training is planned the same way.

Despite the company's name of "Bottled Gas" a large proportion of its installations are tanks. Practically all the house heating will be fueled from tanks—500-gallon capacity for the average home.

In its capital planning, Bottled Gas Corp. has calculated that for each additional heating customer \$100 capital is needed. This is for equipment, accounts receivable and gas inventory in the field.

Meanwhile the consumer puts up \$25, which is not called a deposit, but rather a filling charge on the tank. The customer is credited with this sum against his bill if he discontinues service. This is reasonable compared with \$75 worth of oil he might have to buy initially. The consumer also pays

**With Every New Customer Requiring a \$100 Capital Investment,
Virginia Operator Finds it is Easy to Grow Too Fast.**

the price of the furnace plus the installation charge.

The order of procedure of Bottled Gas Corp. in getting into the heating business has been as follows:

To Build Heating Load

1. Last winter heating equipment installed experimentally with selected consumers included Bryant suspended unit heaters, Empire floor furnaces, Reznor circulators, "Saf-Aire" wall heaters, and Bryant winter air conditioners with duct systems.

2. Performance was studied, and consumer reactions obtained.

3. To build up a prospect list, return postcards were sent to 2500 present non-heating consumers in Richmond and vicinity.

4. Hiring of the two salesmen-engineers started in June.

5. Their training course, scheduled from June 12 to July 17, is now in progress.

6. During the rest of the summer and fall these salesmen will be out selling heating installations.

7. The situation will then be studied as to whether the company desires more house heating. Capital involved, and effect of house heating on balance between summer and winter will be considered.

Mr. Williams states that Bottled Gas Corp., one of the largest and possibly the largest operator in the state, now has nearly 20,000 customers, including both those served directly by the company, and those served by its dealers. It

is planned eventually to query all retail customers by return postcard on the subject of house heating.

In selling, no effort will be made in the territory of this company to claim that propane heating is cheaper than competing fuels. Consumers are being told it is a little more expensive but the cleanest, most efficient and most trouble-free.

Illustrating the favorable reception to LP-Gas house heating in its territory, the company has received permission to quote the following letters from consumers:

Customers Like LP-Gas Heat

"The bottled gas floor furnace you installed in our home last fall has been most satisfactory. It has been a real relief to me not to have oil to bring in each night or the dirty job of cleaning out the oil circulator.

"It has previously cost us around \$90 to heat our home with oil whereas this year, even with all the convenience of bottled gas, our fuel cost was only \$92. I do not hesitate to recommend this convenient and economical heating system to everyone. I would not be without it.

"W. H. Mitchell

"Glen Allen, Virginia"

"I am completely satisfied with my Bryant unit heater. With the unit suspended from the ceiling, valuable floor space can now be used for other purposes. The slightest drop in temperature brings instantly a flow of comforting warmth evenly spread throughout the dining area.

"In my opinion, it the finest heating

TANKS for Industry



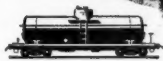
a c f

Recognition

comes only to those who cling to the highest manufacturing standards...who insist and prove that their products deliver the utmost in dependability and quality. For half a century, A.C.F. has been recognized as an outstanding builder of tank cars, storage tanks and processing equipment. That's why A.C.F. is a good name and a good name to remember.



PROCESSING EQUIPMENT



TANK CARS



STORAGE TANKS

AMERICAN CAR AND FOUNDRY COMPANY, NEW YORK • CHICAGO • ST. LOUIS
CLEVELAND • PHILADELPHIA • WASHINGTON • PITTSBURGH • SAN FRANCISCO

system I could have selected for my new restaurant.

"E. G. Luck
"Luck's Grill
"Richmond, Virginia"

"We are mighty proud of our gas floor furnace. While so many of our friends were worrying with their oil furnaces, we were enjoying the dependability of gas heat. Not once have we had any trouble with our gas heating system. Its clean, carefree performance is wonderful.

"C. A. Wyatt
"Richmond, Virginia"

Text of the outgoing part of the return postcard follows:

"Dear Customer:

"We are mighty proud of the many compliments we've received from our customers using "Metered Heatflame" gas for house heating. Such expressions as 'I didn't know any method of heating could be so satisfactory and trouble-free,' are common pronouncements—more than just talk. They attest to prideful experiences. If you, too, are thinking in terms of a modern heating system which can be financed for a period of 36 months with no down payment, would you not like to have our heating engineer survey your home? There's absolutely no obligation. Simply fill in the attached card.

"Cordially yours,
"Bottled Gas Corp. of Virginia"

On the return side of the card, there is space for the name and address of the consumer, who is asked to check his present method of heating, whether with wood stove, coal circulator, oil circulator, oil floor furnace or other.

The company became interested in the house heating business when it was found dropping off in appliance business in the winter led to a reduction of revenue during that season, and it was desired to develop winter revenue.

Metered Service for All

All of the company's direct retail customers receive a metered service with American Meter and Rockwell Emco equipment. Rates are on a sliding scale by the month. The company retains ownership of all outside equipment.

It is believed a good heating market will be 5-room bungalows, which can be fully heated in most cases by a floor furnace, with a possible addition of a wall heater.

A development of considerable interest in the outskirts of Richmond is Lewis Gardens, Sandston, Va. This includes 526 attractive apartment houses, with several units in each house.

LP-Gas serves for house heating, cooking, water heating, and refrigeration. The gas is piped in 4000 feet of 4-inch pipe from a 30,000-gallon tank on the outskirts to each house. There's space for more tanks if additional apartment units are built.

Estimates indicate an average \$15 a month bill for each apartment for all four uses. It is believed the rates are competitive with oil, due to the economy of piping gas through mains, and other efficiencies. A separate meter (American Meter 2B-50) is supplied for each apartment. Rates here are also on a sliding scale by

SCHEDULE OF HEATING TRAINING

Type of Training—1st Week

Service trucks. 3 days.
Appliance sales (with appliance salesmen).
2 days.

2nd Week

Heating School—Bottled gas installations.
Heating School—Heat loss calculations and estimating.
Heating School—Sizing duct work.
Heating School—Sizing and selecting equipment.
Heating School—Saf-Aire school.

3rd Week

Heating School—Bryant school. 2 days.
Heating School—Examination.
Heating School—Sales procedures.
Heating School—Appliance selling.

4th Week

AGA sales lectures. 2 days.
Selling of heating equipment. 2 days.
Examination.

5th Week

Field work in heating—Survey. 5 days.

6th Week

Begin on commission selling.

the month. For each two apartments, there is one Bastian-Blessing 2503 regulator.

Equipment installed in compact space in the kitchen of each apartment unit consists of a Bryant winter air conditioner, Bryant water heater, Hardwick gas range, and Servel refrigerator. Warm air is carried to the rooms through ducts, and emerges through registers.

Tenants are pleased that no streaks are caused on the walls near the registers. Each apartment is a duplex, the larger ones, four rooms and bath, including two bedrooms, renting for \$61 a month; the smaller ones, three rooms and bath, including one bedroom, \$51.

Henrico Gas Service Corp. owns and operates the plant and gas mains systems and handles all service for the Lewis Gardens project.

Each family has independent, automatic control of all heating and water heating in its apartment—a far cry from the usual fate of apartment dwellers for whom continued battles with the landlord's employes about heat and hot water are all too familiar.

Mr. Williams suggests that Lewis Gardens have perhaps shown the way to new economy in LP-Gas operation.

In order to systematize the training of the two young heating salesmen-engineers now being indoctrinated, an outline of the course has been drawn up day-by-day, in as professional a fashion as it would be done by a university.

It starts with three days on the service trucks, continues with two days studying appliance sales with salesmen.

The second week is taken up with heating school, including bottled gas installations; heat loss calculations and estimating; sizing duct work; sizing and selecting equipment; and "Saf-Aire" school.

The remaining weeks are similarly detailed, as in the schedule above.

Since most of Virginia is just north of the territory in the Southeast where LP-Gas house heating has been used to any great extent, Bottled Gas Corp. of Virginia is doing a pioneering job.

The company, which soon will celebrate its tenth anniversary, has bulk plants in Richmond, Fredericksburg and Keswick.

Careful Sizing of Heating Equipment Essential to Satisfactory Installations

By E. G. JOHNSON

The Coleman Co., Inc., Wichita, Kansas

TO give good heating results, the installed equipment must be correctly sized to handle the heating load. While

it is true that comfort is a matter of degree, the heating contractor must estimate rather carefully what the customer expects out of his heating dollar.



E. G. JOHNSON

Generally, individuals do not look for much

more than "spot" heating out of a radiant heater. As the heating investment becomes greater, as in the case of floor furnaces, wall heaters, and so on up to forced air systems, users demand (and rightly so!) good comfort conditions and at a reasonable cost.

In the past few years there has been entirely too much "hit-and-miss" selling on the part of some dealers. Equipment has been sold without enough attention to the heating requirements of the building. The results of such selling are not good, to say the least. Often the building is not properly heated,

and the customer just *knows* the fuel is no good and neither is the furnace!

A few complaints in an area act as a damper on future sales. Consequently the dealer loses the value of his local advertising and the national advertising programs carried on by the manufacturers of the various lines of equipment he has for sale. Also, the dealer loses the best recommendation of all—the word-of-mouth advertising which is spread by enthusiastic users.

Notice that merely having a satisfied customer is not enough—shoot for customers who are so thoroughly sold on you and your installations that they are continually telling their friends of the fine results being obtained from their new heating system. This all helps to make new business.

Before the public became aware of the advantages of automatic heat it was possible for a dealer to make a guess at the heating load and proceed accordingly. He had his share of trouble, but as he gained experience, the troubles began to diminish. Equipment was mostly hand-fired, and the fuel cost relatively low. People dressed warmer and the use of thermostats was

Sells Easily!

Beautifully styled! Gives plenty of heat! Priced amazingly low!

Installs Quickly!

Comes with four fixed orifice caps. For any kind of gas!

No Servicing!

Dependable—needs no follow-ups for repairs, adjustments, etc. Initial profits are yours for keeps!



The No. 320-S

Comforteer **Vented Circulator Heater**

AGA Approved

...the new star of the complete, profit-making Comforteer Heater Line!

THERE'S plenty of business in space-heaters — and the Comforteer line gives you everything it takes to get a lion's share in your area:

Beauty that sells on sight. Price that is competitive with all comers. Quality that is second to none. Economy that appeals to any budget. And selection to meet every need — types and sizes for every requirement, for any room in the house. Capacities up to 35,000 Btu — for any kind of gas. All heaters (except small utility sizes) may be equipped for use with safety pilots and other safety devices.

Send for complete literature and price list. Sell the Comforteer line for new profits in winter heating.

There's a Comforteer for every budget and every space-heating need.

INLAND STEEL CONTAINER COMPANY

325 N. CORTEZ STREET • NEW ORLEANS 19, LA.

T-18A

JULY — 1950

73

CONDENSED METHOD HEAT LOSS FACTORS

1. WINDOWS & DOORS		Multiply sq. ft. by:
a.	Without storm sash	113
b.	With storm sash	75
2. OUTSIDE WALLS (NET)		Multiply sq. ft. by:
a.	SOLID MASONRY - (Brick, stone, etc.) with plaster applied direct to inside surface of masonry wall.	45
b.	AVG. FRAME-Brick Veneer-Wood Siding - Shingles or Stucco - with sheathing, bldg. paper, studs, lath and plaster	30
c.	FURRED MASONRY - (Same as 2a with air space between plaster and masonry wall)	
d.	INSULATED FRAME - Same as 2b - with 1" or less insulation board or blanket	20
e.	HEAVILY INSULATED - Same as 2b - with 2" or more insulation	10
3. CEILINGS & WALLS		Multiply sq. ft. by:
a.	CEILING - Plaster on lath or wall-board. No floor above - Attic not vented.	34
b.	Same as 3a - with 2" or more insulation	12
c.	CEILING of first floor room below unheated room on second floor	17
d.	INSIDE WALL adjacent unheated room	
4. FLOORS		Multiply sq. ft. by:
a.	Double wood floor - over cool basement or other enclosed space	15
b.	Same as 4a - but open space below floor exposed to outside	32
5. INFILTRATION (AIR LEAKAGE)		Multiply each sq. ft. of window and door area by:
a.	WINDOWS AND DOORS Average fit - Not weatherstripped	50
b.	Average fit - weatherstripped (or equipped with storm sash)	30
c.	Poor fit - not weatherstripped	140
d.	Poor fit - Weatherstripped (or equipped with storm sash)	43
e.	EXTRA FOR EACH OUTSIDE DOOR	1000
f.	EXTRA for air lost up fireplace flue	3000

Fig. 1

virtually unknown. In other words, Mr. J. Q. Public was not particularly exacting in his demands. Building construction rarely included the use of insulation, weatherstripping, and storm sash.

In the last 20 years, various types of insulators have become common practice so that the old-timer's judgment, which he gained the expensive way, is all upset. The only way to size equipment is to figure the heat loss accurately. If the equipment is too large, good heating results will not be obtained. This may sound ridiculous, but it will become apparent when

one realizes that the oversized heater produces a large amount of heat quickly—then is turned off—first, too hot, then too cool.

Furthermore, this type of operation permits excessive stratification during the off-periods when there is little circulation. Also, you run the chance of losing the job to the competitor who knows how to properly size the equipment. His price may be lower because if you guess the heat loss too high he will be quoting on a smaller furnace. On the other hand, if you should guess the loss too low and sell an undersized furnace, you will have "no heat" complaints which cannot be easily corrected.

Since all heating equipment is rated in Btu's, it follows that the heating requirements of the building also be calculated in terms of Btu's. A Btu is the standard unit of heat measurement used by engineers and has nothing to do with any government agency. A Btu, or British thermal unit, is merely the amount of heat needed to raise one pound (or about one pint) of water 1° Fahrenheit.

Since a Btu is a very small amount of heat, the heat loss of even small buildings often is in the neighborhood of 35,000 to 60,000 Btu's per hour. These figures sometimes lead to unnecessary worries and fears because they sound so large.

A good way to visualize a Btu is to light an ordinary kitchen match and let it be completely consumed. The amount of heat liberated will be about one Btu and will give an idea as to the quantity of heat represented by one

Btu. This is a good demonstration to perform in front of the customer. With a little thought, it can be built into quite an impressive story with real sales punch.

Before jumping off into the subject of heat loss calculations it might be well to mention that the "condensed method" to be presented has been used by the author and his associates for some years with very accurate results. The condensed method is based on the fundamental method given in "The Guide" of the American Society of Heating and Ventilating Engineers. However, much of the tedious and cumbersome arithmetic has been eliminated. With a few simple, straight-forward steps, a dependable result is obtained.

To get into the mechanics of heat loss, it must be realized that heat flows from warmer areas to cooler areas. The rate of flow depends on the type material and the temperature difference. Loose, fluffy materials with large numbers of air cells are good heat dams or heat barriers. Solid or tightly packed materials such as brick, concrete, or glass transmit heat quickly and are not good insulators. As the thickness of any material is increased the heat flow is reduced.

The basic transmission heat loss formula is stated mathematically as $H = A \times TD \times "U"$. In words, this

The Coleman Co., Wichita, Kan., publishes a "heating survey" form that details the information needed to compute heat losses in any building. Copies of this form may be had without charge by writing the company.

HEATING TERMS

CONDUCTION—(external) Transfer of heat between two distinct bodies that touch each other.

CONDUCTION—(internal) Transfer of heat between two parts of the same body.

CONVECTION—Transfer of heat by circulation.

RADIATION—Transfer of energy through space by electromagnetic waves.

means that the total heat flow in Btu's per hour (H) is equal to the area in square feet (A) multiplied by the temperature difference (TD) and that result multiplied by a factor (U).

The area can be easily measured. The temperature difference is determined by the climatic zone in which the job is located. The "U" factor is the number of Btu's transmitted through one square foot of a particular material in one hour's time with a 1° temperature difference. These "U" factors for different materials are listed in all standard heating text books and have been determined experimentally and by calculation. This type of heat loss is known as "the loss by transmission."

Another type of heat loss to be accounted for is called the "infiltration" or "air leakage" loss. This is the heat needed to warm the cold air which leaks into the heated space through the cracks around the windows and doors.

The first step in heat loss calculations is to determine the transmission loss. Determine the areas in square feet of all surfaces exposed to a temperature below 70°.

CLIMATE CORRECTION MULTIPLIERS

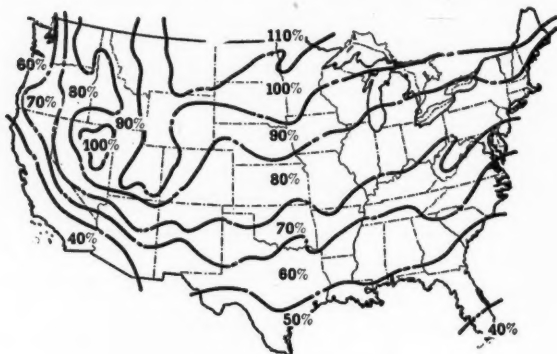


Fig. 2

This normally includes:

1. Window and door area combined.
2. Net outside wall.
3. Ceiling area below unheated room or attic space. Also inside walls of adjacent unheated rooms.
4. Floor area.

The window and door area is obtained by adding together the number of square feet in each window and door. Note that the opening size of a window is to be used and not merely the glass size.

To obtain the net wall area, it is first necessary to figure the *gross* wall area. The gross wall area is found by multiplying the lineal (or running) feet of exposed wall by the ceiling height. The *net* wall is then found by subtracting the window and door area from the gross wall. This is necessary because glass transmits heat more rapidly than the walls. Ceiling and floor area is found by multiplying the inside length of the space (in feet)

by the inside width (in feet). The resulting answer is then in terms of square feet.

Since the "U" factor is generally a two-place decimal (.34, .30, .12 and the like), inaccuracies are sometimes introduced by the estimator due to aimless wandering of the decimal point. The temperature difference has been arbitrarily set at 100° and multiplied by the "U" factor. Thus, our former .34 becomes 34. ($TD \times U$, or $100 \times .34 = 34$.) The decimal point has been eliminated and to obtain the heat loss of the area in question, it is only necessary to multiply this area by the factor 34.

The result is the number of Btu's transmitted through the surface when the inside temperature is 70° and the outside temperature is 30° below zero (or 100° differential). A climatic correction factor will be discussed a little later in this article.

Figure 1 gives a list of various factors which apply to most con-

Prest-O-Lite

Trade-Mark

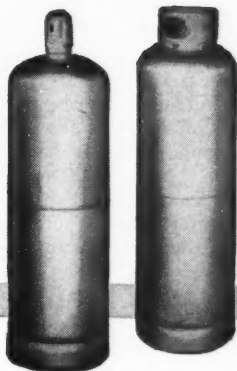
CYLINDERS

FOR

Top-Notch Quality

AND

Greatest Saving



MADE BY
"LINDE"

You save money in the long run when you insist on the best cylinders. PREST-O-LITE cylinders for liquefied petroleum gases are the leaders of the field because of their longer service life, thicker walls, extreme uniformity of wall thickness, light weight, and superior design. They're backed by 35 years of experience in the development, manufacture, and use of compressed gas cylinders.

A complete line is available ranging in capacity from 20 lb. to 100 lb. Other sizes or styles can be made to your specifications. All cylinders are supplied with or without valves. Valves are available

with a fusible safety plug and a spring-loaded safety device. You can also get these valves equipped with a gauge that indicates the "outage" level when filling the cylinder. PREST-O-LITE cylinders are made, tested, and inspected in accordance with I.C.C. Specification 4BA-240—and undergo many additional rigid tests.

The term "Prest-O-Lite" is a registered trade-mark of The Linde Air Products Company.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street **UCC** New York 17, N. Y.

Offices in Other Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

The Linde Air Products Company
30 East 42nd Street
New York 17, N. Y.

Send full information about PREST-O-LITE cylinders
for liquefied petroleum gases.

Name.....

Company.....

Address.....

LP-7

MAIL THIS
TODAY AND
START SAVING

ditions met in ordinary practice. Note that under 1-a the square footage of the windows and doors are to be multiplied by 113 if they do not have storm sash. If storm sash and storm doors are present, the factor drops off to 75 as shown in 1-b. Considerable saving in heat loss is noted by the use of storm sash. Each type of surface is multiplied by the appropriate factor. The sum of these losses is the total transmission loss.

The air leakage is then estimated. Simply multiply the area of the windows and doors already figured by one of the factors listed in Table 5 of Figure 1. Since doors usually fit somewhat more loosely than windows, add 1000 Btu's for each *outside* door. If a wood burning fireplace is present, add 3000 Btu's. This is still on the basis of

100° temperature difference.

Adding the transmission loss, the air leakage loss and "extra" for outside doors and fireplaces, gives the total Btu loss per hour. This will be the number of Btu's required to heat the building to 70° when the outside temperature is 30° below zero.

Heating requirements are not so great where the weather does not get so cold. In Louisville, Ky., the outdoor design temperature is generally accepted to be zero. The "design temperature difference" or "temperature rise" would be 70°. Thus the heating requirements are only 70/100, or 70%, of the heat required based on a 100° temperature difference. To correct the heat loss to the Louisville zone, we multiply our 100°/TD results by 70% and this then gives the heating re-

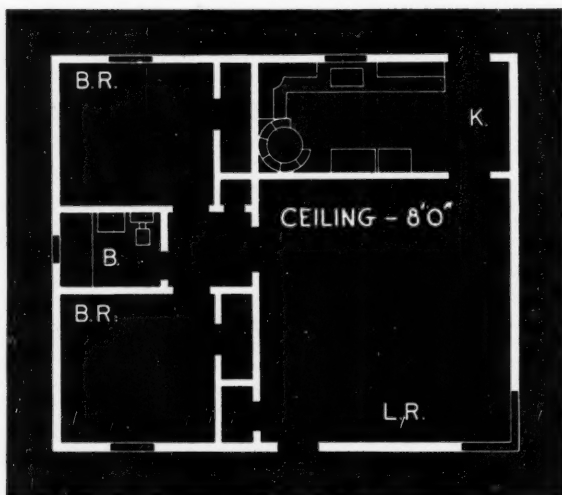


Fig. 3

Table 1.

Gross wall	=	(30' + 25' + 30' + 25') x 8'	=	880 sq. ft.
Glass and outside door area combined:				
6 Windows	@	12 sq. ft. each	=	72 sq. ft.
2 Doors	@	20 sq. ft. each	=	40 sq. ft.
		Total		112 sq. ft.
Gross wall	=	880 sq. ft.		
Glass & doors	=	112 sq. ft. x 113 (1-a)	=	12,656
Net wall	=	768 sq. ft. x 20 (2-c)	=	15,360
Ceiling	=	750 sq. ft. x 12 (3-b)	=	9,000
Floor	=	750 sq. ft. x 15 (4-a)	=	11,250
Air leakage	=	112 sq. ft. x 30 (5-b)	=	3,360
Extra for doors	=	2 x 1000 (5-e)	=	2,000
Btu heat loss per hour at 100° temperature difference			=	53,626
Climate correction multiplier (for Louisville)			=	70%
Total Btu heat loss for 70° temperature difference			=	37,538

quirements for Louisville. Other climate correction factors are shown in Figure 2.

This method is best explained by a typical example of a house located in Louisville. In Figure 3 is shown the floor plan of a house 30' long (inside) and 24' wide (inside). The 8'-0" ceiling is insulated with 4" of insulating material. The outside walls are of frame construction and have 1" of insulating board used as sheathing. The windows are without storm sash and have average fitting weatherstrips. There is an enclosed crawl space below the floor. What is the heat loss? (See Table 1.)

To properly heat the home, a heating unit should be selected which has an output of at least 37,538 Btu's per hour. In other words, always select heating equipment which has an output equal to, or slightly exceeding, the heat loss.

If central heating plants are

used, an allowance of 10% to 20% should be included in the heat loss to allow for the loss of heat from ducts, and the furnace selected accordingly.

Every heating equipment salesman and installer should learn how to calculate heat losses. Not only will it serve as insurance against improperly sized jobs but it will also aid in obtaining enthusiastic customers!

Most manufacturers have instruction booklets available covering the installation of their equipment. The importance of studying these booklets cannot be over emphasized. The National Warm Air Heating and Air Conditioning Assn., 145 Public Square, Cleveland, Ohio, has a number of excellent heating bulletins available at a reasonable cost. Booklet No. 3, titled "Measuring Heat Losses" is interesting and informative to engineer and beginner alike.

Sells Gas Against Oil for Heating --And on a Cylinder Basis Only

HENDEL Petroleum Co., with an LP-Gas bulk plant in Waterford, Conn., has been selling propane heating for three years.

At first glance, one might think selling this kind of business would present obstacles in a cold climate like that of Connecticut.

We have found on the contrary that for certain kinds of house heating, propane is economical, in addition to its other advantages of cleanliness and dependability.

From the point of view of this company, the business has proved advantageous, principally because it has made possible a balancing of the summer and the winter loads.

While in the southern and western parts of the United States the winter load often is heavier because of heating, the summer load had been heavier in our territory. This is because of the large demand from summer resorts, and

By **LAWRENCE HENDEL**

Hendel Petroleum Co., Waterford, Conn.

from people who have summer homes along the Connecticut seashore and inland. This meant that at one time our summer load was two or three times the winter load.

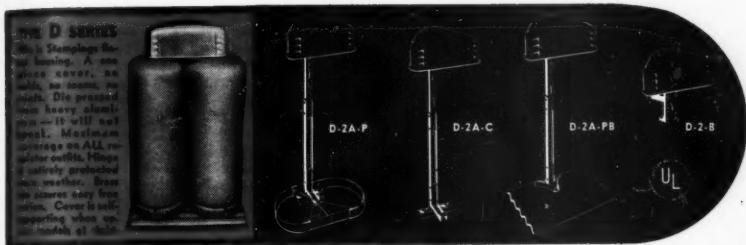
Now, thanks to the heating business, the summer and winter propane loads of Hendel Petroleum Co. are about equal.

Of the total number of consumers which the company has, increasing numbers are heating customers. Among the best prospects for selling gas heating are houses in new developments which were put up during the war without central heating, and old houses erected without central heating.

The reason why propane heating sometimes can be more economical than oil is that as the customer's

Most dealers have to skirmish feverishly to find summer loads to off-set demands for gas in the cold season, but up in Connecticut, where winter is really winter, one distributor—the Hendel Petroleum Co.—not only found it easy to sell gas for house heating, but by so doing was able to balance the inordinately high summer demand due to the influx of vacation-time residents.

Select the model that you need from these STAMPINGS HOUSINGS . . . THE COMPLETE LINE

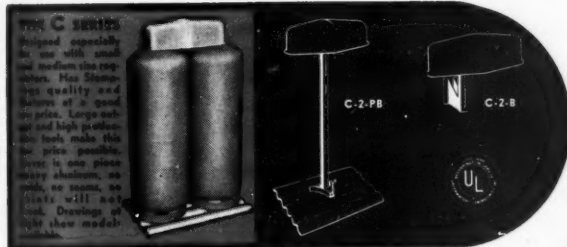


Complete unit with hood, post and base form. The post connects to the foot which is anchored in the concrete.

Complete unit consists of hood, post and foot. Reusable metal form (DIF) recommended for pouring base.

Complete unit with hood, post and prefabricated base. Ready to install immediately. Easy to set up.

Complete hood and bracket unit for attaching directly to wall of building. Holes adapted to all siding widths.

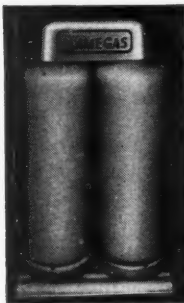


Consists of hood, post and prefabricated base. Cylinder locator on post for fast servicing. Easy, fast to set up.

Consists of a hood, hinge-mounted on bracket. Attaches directly to wall. Simple to install, easy to service.

THE M-2-PB

CAST ALUMINUM HOUSING
This hood is heavy aluminum, permanent mold cast. Maximum coverage on all regulator outfits. Fits snugly, yet operates with adequate clearance. Your name can be cast in red as shown. Complete with hood, post and prefabricated base.



Heavy gauge steel with baked enamel, gray finish. Bonderized to resist rust. Brass pin hinge.

Eastern Office at
522-5th Ave.
New York



STAMPINGS INC., DAVENPORT, IOWA

THE HOUSE OF BETTER HOUSINGS!

use of our fuel increases, the cost per cylinder decreases.

If we estimate at the start that the customer will reach a rate of consumption that will entitle her to the lowest rate, we start giving her the benefit of that rate right away.

Take the home of Mrs. A, a six-room house a couple of hundred feet from the Connecticut shore of Long Island Sound. This home during the year from May 1, 1949, to May 1, 1950, used only propane for heat. We delivered two cylinders at a time to a four-cylinder hookup. The total bill for the year was only \$154.

Beats Cost of Oil

Without space heating, she would have used about 8 cylinders for cooking and water heating. The rate would then have been higher per cylinder, total about \$60. Subtracting \$60 from \$154 we get \$94, which is the cost to Mrs. A. of heating with propane for one year.

Our investigation indicates that this was less than with oil. In fact, a friend with a house about the same size spent more for heating with oil.

In the six-room house of Mrs. A described above, four Clow "Gasteam" radiators were used in the various rooms. This house has attic vents, and the method proved fully satisfactory.

Another customer is Mr. B. The LP-Gas equipment in his seven-room house consists of an Empire floor furnace, 65,000 Btu; one non-vented Clow Gasteam radiator; a gas range; a gas water heater and

SEND FOR HOUSING ACT

Every gas dealer should send to the government at Washington, D. C., for a copy of the Housing Act of 1949.

Billions of dollars will go into housing in the next few years under this act. Electrical competition is trying to grab off this business. Selection of fuels for cooking, water heating, refrigeration, and house heating will be made by local authorities guided by a Federal formula.

There will be much farm building construction under the act.

It will pay LP-Gasmen to learn how much of this money will be spent in their districts.

an 8-foot Servel refrigerator. The radiator is used as an auxiliary to heat one part of the house not served by the floor furnace.

The household of another satisfied customer, Mrs. C, consists of herself and another elderly lady. They live in a five-room house over 200 years old, with no cellar. They have a gas range and one Empire floor furnace. They like to keep the temperature at about 75° all day in the winter and are able to do so with this equipment. They use only propane in 100-pound cylinders at the heating rate, making a total of \$165 per year.

For cooking alone they would use about four cylinders at the higher rate, or a total of about \$45.

There's no fear of ever running out of gas, because there's always a supply on hand that will last two weeks.

We find that four 100-pound cylinders are usually sufficient for a typical domestic installation using house heating. If, however, six bottles are necessary, we'll put in that number.

The typical four-cylinder instal-

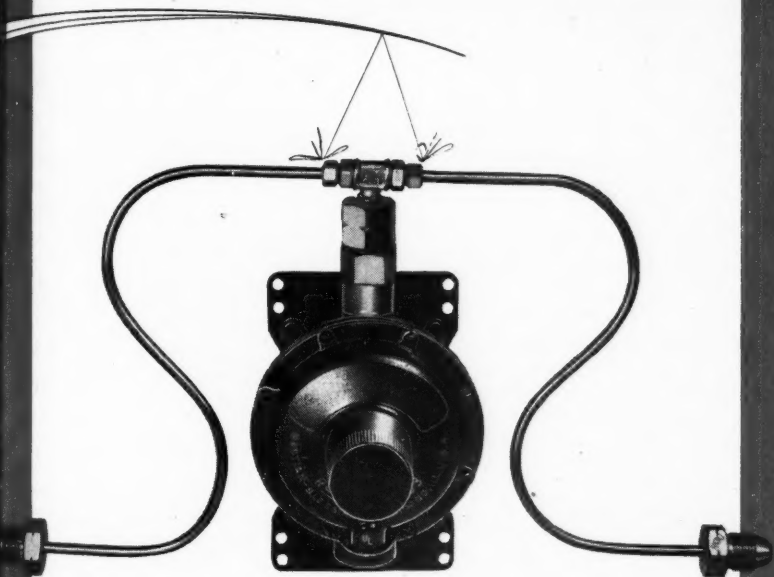
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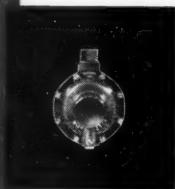
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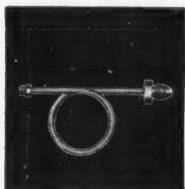


RegO Outfit No. 5715CM

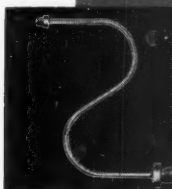
You'll get precision regulation . . . proven dependability . . . plus economy, by specifying these new RegO Outfits for Portable Cylinder Systems.



You can specify these new outfits with the small No. 2303 regulator or with the larger No. 2403 . . . In either case you will be certain to get time-tested RegO regulator accuracy and dependability.



The flexible copper pigtails furnished with these outfits are available straight or with either of the two bends shown above. Pigtails have 1/4" inverted flare connection at the manifold end, 970 POL male connection at cylinder end.



The BASTIAN-BLESSING Company
4201 W. Peterson Ave., Chicago 30, Illinois

PIONEER AND LEADER IN THE DESIGN AND MANUFACTURE OF PRECISION EQUIPMENT FOR USING AND CONTROLLING LP-GASES

RegO is the registered trade mark of the Bastian-Blessing Co.



GOODBYE TO OIL HEATING

"Gas home heating unit sales will never again be topped by oil home heating units," H. Leigh Whitelaw, managing director of the American Gas Assn. recently told the Gas Appliance Manufacturers Assn.

"In the first quarter of 1950, sales of all gas home heating units totaled 148,800 while oil home heating units amounted to 125,900. The gas appliance industry feels confident that the margin will steadily increase."

lation has two cylinders on and two in reserve with an automatic throwover. All a consumer has to do is look at the automatic gauge and it will tell her whether she's on reserve or not.

The last winter, that of 1949-50, was the third of Hendel Petroleum in the heating business, with propane. The first winter was experimental. The majority of the installations were sold the second winter, but some more last winter.

The company has its bulk plant in Waterford, Conn., with two large storage tanks.

Three heating routes are operated out of the Waterford, Conn., bulk plant and one each out of Middletown, Conn., and Bradford, R. I., the last two locations being depots, to which cylinders are sent from Waterford.

One driver out of Waterford will cover perhaps 75 customers Monday, and a like number on each of his second and third routes Tuesday and Wednesday each week during the heating season, leaving filled cylinders where they are needed. His truck holds 50 cylinders, and if he needs to reload, he

may come back to Waterford to do so.

Drivers out of Middletown and Bradford deliver to heating customers along with those not having propane space heating.

Gas for heat is sold in a radius of 20 miles of each point of distribution—that is, from the bulk plant in Waterford and from the depots. That means that heating installations are served to a distance of 60 miles from the Waterford bulk plant. Middletown is about 40 miles from Waterford, and the territory served extends 20 miles farther.

Balanced Cylinder Handling

Another respect in which heating business serves as a balancing factor for the summer and winter load is in cylinder utilization. When summer residents have returned to their winter homes, we pick up their cylinders. We paint them and parcel them out to heating customers, increasing the latter from two to four cylinders. Meanwhile we have weighed the cylinders and given the summer customers credit for unused gas.

Most of our heating business is on a cash basis. We have yet to be stuck on a heating bill.

The aim is to have as many heating customers as possible close to each other, thus cutting down delivery costs. We have found that if Mrs. J buys a gas heating system she may recommend the same to her next-door neighbor.

Often installations sell themselves through this kind of recommendation. Cleanliness of the fuel

HEATING, VENTILATING GUIDE BOOK

Thoroughly revised and brought up to date with current practice and the latest research, the 1950 edition of the Heating, Ventilating and Air Conditioning Guide has been issued by the American Society of Heating and Ventilating Engineers.

The Guide contains a 1024-page technical data section and a 396-page catalog of the latest manufacturers' products, and is the most extensive issued thus far.

and good service help. People come in to see a new propane system just as they flock in to see a new television set. For sales purposes the only literature we use is that of Clow and Empire.

Lower Installation Costs

Less money is required to put in most of these systems than for competing fuels. We have found a good market among young people who don't want to tie up \$1000 in a heating system.

In deciding on the size and kind of heating equipment we use a heating calculator and consider the size, number of windows, location of the house and other factors. With a floor furnace the aim is to place it a little to the north of the center of the house, and put the thermostat in a cold part of the house away from the furnace.

Hendel Petroleum Company is about 10 years old, having started as a subsidiary of Hendel Furniture Co. of New London. Vehicles in the LP-Gas part of the business now include eight 1½-ton pickup trucks, for service and delivery; three stake body trucks, one of which will carry 50 cylinders, and

the others, 30 cylinders each; and three sales cars.

At present the entire operation is on a cylinder basis, but because of the heating business consideration is being given to starting bulk delivery.

Purdue University Will Have Service School in August

An LP-Gas service school will be held at Purdue University, Lafayette, Ind., Aug. 16-18. Accommodations will be available the evening of the 15th.

In addition to the LPGA, the state associations of Ohio, Michigan, Illinois, Indiana and Kentucky are sponsoring the school.

According to Joseph Crowden, national LPGA director from Indiana, the sum of \$30 has been agreed upon by a committee representing the industry and the university to include the registration fee, tuition, lodging and meals, and a manual incorporating all papers presented.

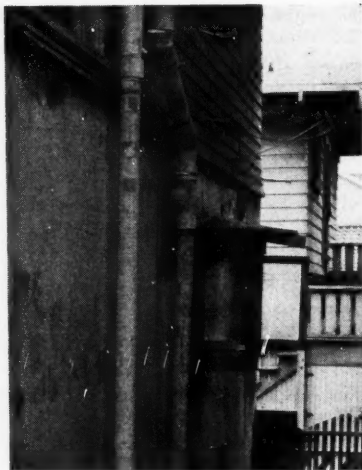
A limit of 200 students has been set for registration. Certificates will be awarded those who complete the course.

NBPA Issues Booklet Covering Pipe Sizing Standards

A 10-page booklet, "Standard No. 1, A Standard for Pipe Sizing for Butane and Propane Gases," has been issued by the National Butane-Propane Assn.

One of the essentials in any LP-Gas installation is adequate piping and the booklet proceeds to discuss the subject in detail. Originally prepared by Earle A. Clifford of the National L-P Gas Institute, the standard was adopted by the NBPA, Jan. 27, 1950.

These are the two rear bedrooms and bath that had to be heated independently.

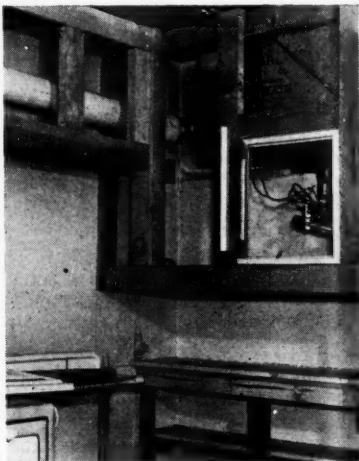


This shows the vent for kitchen and the two floor furnaces that heat the rest of the house.

"They Said It Couldn't Be Done"

A salesman said it was impossible. A serviceman looked at the job—noted the exhaust fan recess in the kitchen—and disagreed. The result was a perfectly heated home using three floor furnaces. The accompanying pictures tell the story.

The floor furnace was suspended in the alcove in the kitchen (note three-way control), framed in with vent attached. From here, the vent runs through outside kitchen wall where the exhaust fan dispersed cooking odors. Air burned by the furnace for combustion is taken in from the outside of the house around the vent used for exhaust. The structure was then neatly refinished and the exhaust fan replaced.



Selling Through Service

By L. E. SALISBURY

District Manager, Ward Heater Co.,
Los Angeles

BY "selling through service," I don't mean that old gag about advertising "free estimates on service" that some use as a door opener to get within whispering distance of Mr. or Mrs. Buyer's ear, in order to use some high-powered selling tactics. I refer only to that honest, thorough, polite and efficient service the cus-



L. E. SALISBURY

tomer is entitled to, and in the end, usually gets.

In the LP-Gas industry we are confronted with a peculiar problem of merchandising that a city merchant does not have. When he sells an appliance, whether it be gas or even electric, there is usually a public utility company to take up the shock when there is a complaint. Now, this utility company has spent much time, energy and money on the training of its servicemen. It realizes that they must be experts in servicing all the equipment on its lines, and the public utilities' servicemen cannot say, "For goodness sake, lady, you should have known better than to

buy this piece of junk in the first place." He must be diplomatic. Some dealer has sold that "piece of junk" and some intelligent, or maybe poor, subscriber has purchased it and his wisdom cannot be questioned without insulting him; or the utility company may find itself another life-long enemy who votes against it in all public elections, etc.

Now we have a problem because we are selling fuel that approaches that of the utility in that our customers expect us to service the equipment that uses this fuel. We also are merchandisers; we may have sold them all of the appliances they are using or they may have purchased from some dealer in that city who has made extravagant claims and in addition "saved them money" (?). That is what they

FOR THE LAST 15 YEARS (with time out for World War II service), L. E. Salisbury has been with the Ward Heater Co., of Los Angeles. He is a mechanical engineer and an expert on heating and ventilation. He came to Ward from a large public utility company where he was a dealer representative. He understands the dealer's problems and how they differ by localities, and makes sales not by selling but by helping dealers solve their service problems. He believes, in turn, that dealers should hold old customers and gain new ones on the strength of giving A-No. 1 service.—Editor.

there's something **EXTRA** ... in a

FLAME

IT BOILS BEST
IT BAKES BEST
IT ROASTS BEST

*and a Universal makes it
BROIL LIKE CHARCOAL !*

EXTRA in boiling

No domestic fuel will bring water to a boil as fast as gas. Universal's exclusive Simmer Save giant burner will take care of the largest household vessel, and will be ready to turn to "simmer" in no time. Then not five heats, nor six, nor seven—but a thousand heats down to keeping baby's bottle warm directly over the flame.

EXTRA in baking

Live heat, moving heat, heat that can be controlled to one degree, comes only from a gas flame. Universal's engineering also gives uniform heat all over the oven, so that there is no shifting of food from top to bottom, from side to side.

EXTRA in roasting

A Universal gas flame gives a constant heat while the oven is working. Not on-and-off, but up-and-down. That's why roasts are done steadily. That's why a Universal gas range roast tastes good!

EXTRA in broiling

Charcoal is a combination of flame and glow. Universal's Radiant Mesh Broiler Burner restores the hot bed and puts in charcoal's double punch—flame and glow. It's exclusive.



Universal
Berkshire
Model

CRIBBEN & SEXTON
Universal
LP-GAS RANGE

CRIBBEN & SEXTON CO., 700 NORTH SACRAMENTO BOULEVARD, CHICAGO 12, ILLINOIS

think at time of purchase, anyway. That dealer is a merchandiser, and uses all the wiles and artifices of advertising, special sales, price inducements, etc., that he can. His interest in the customer usually ends at the point of sale.

But in any case we furnish the fuel—we furnish the SERVICE—and we had better! But let's go further—let's give them the best service possible and turn that service into profit through sales of better, more efficient, more economical appliances. That's what the big utilities are trying to do. Let's make that serviceman the best dog-gone salesman you ever had!

Service From the Manufacturer

How? Simple. Just see that each manufacturer or distributor properly trains your own servicemen in the appliance he is SELLING YOU. That's the SERVICE he owes you. If the salesman who calls on you can't get out and get his hands soiled to teach your serviceman everything he must know, then you are not getting the service due you. You, as a dealer or distributor, should not have to train your men in each different appliance, that is the duty of the one you buy from. If they don't have qualified men, tell them so. See that you get the service due you—(your customer does) or at least hollers and kicks and gives you headaches.

Above all, if there are any weaknesses or probable sources of trouble in the appliances being explained to your servicemen, insist that the instructor point them out and explain the remedies. Your

serviceman is no fool. He will find the weaknesses and troubles eventually and if he has to find them out by experience, he will lose the confidence the instructor built up and you have lost a salesman in your serviceman. He will feel he's been let down, made a goat of, and a sap in the sight of your customer. He will clam up and probably be of no sales asset to you at all.

Know the Answers

Here is what I mean by "Sales Through Service." Given a chance, all normal humans just can't help showing off a little. A person with a secret is just bursting to tell someone else. A man that thoroughly knows his subject is always at ease in explaining it to others and finds pride and self satisfaction in doing so. It is the man that knows just some of the facts that is constantly getting into trouble by "popping off." Confidence comes with experience and knowledge. Here is an example. George, a serviceman, an excellent mechanic, but not too good at grammar, was refueling the tanks on a farm. When he had finished he was asked in for a cup of coffee and the farmer casually mentioned that a salesman from his firm had been trying to sell him an Electrolux (this was back in the days before they were called "Servel"). But he just could not see how a little flame could freeze anything.

Now, thanks to the fact that this serviceman had sat in on the sales meetings, and the instruction was so good, without benefit of technical education he was able to really understand. He said, "Let

me have a piece of paper and I'll show you."

He sketched the system crudely. "Now, in this part there is ammonia and water, mixed together; your flame heats this just a little, not enough to make the water boil hard but the ammonia does and goes up here." Then he as simply explained the hydrogen cycle, etc. When he had finished, whether the farmer and his wife actually understood is not the point. They were impressed with the fact that the serviceman knew his stuff.

The farmer asked, "Well, does it actually do as good as they claim, as good as an electric?" "Sure" came the reply without any hesitation. After the serviceman left, the

farmer called the company and said, "Send it out." The salesman was complimented and received his commission. Now, I ask you, "Who made that sale?"

Remember that your serviceman has a great advantage over the utility serviceman. The utilities man comes on call at time of trouble only. Your man meets your customers each time he fills their tanks. Regardless of the squawks of high bills, a friendly and well trained serviceman can't help but win admiration and make friends. He is also serving the neighbor, and chit chat and little pieces of news that pass from one to the other can be a great asset to you. If he can go from customer to customer knowing that he is respected as an expert on the things that are making their lives more pleasant, he cannot help but take a happier view of life. It's difficult to see the brighter side of life through a glass eye, so let him have all of his sight through education on the thing he has to have: complete knowledge on his service problems of every possible appliance you sell.

The Serviceman is Believed

If he knows, he will reflect it everywhere he goes. He will instill confidence. When your customer has need for a new, or another appliance, they will accept his word as "gospel." He will be able to convince them that anyone can make something a little worse and sell it a little cheaper, but regardless if they buy this cheaper stuff, they are paying more for less in the long run. If we are going to

Typical dual floor furnace installation in remodeled home.

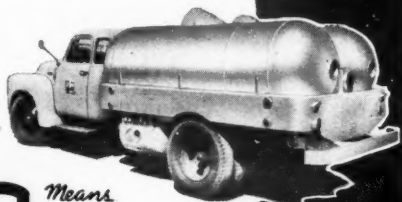


**Safety,
Service,
Savings**

ADD UP TO

**LOW
MILEAGE
COST**

LMC Home Delivery Units are engineered to make you money every day of their long life. They are designed and constructed as you would have them if you were personally supervising the job with accent on greater safety, longer life and low-haul-cost-per-mile. High tensile steel and indented fittings assure a superior safety factor. Light weight, low center of gravity, large capacity pump, and valves allow you higher payloads. A needle bearing universal joint with square shaft allows axial movement of shaft which increases the life of the joint. These are just a few of the reasons why the LMC Home Delivery Unit is a money-maker for you! Put it to work for you soon!



TRANSPORT
TANKS

DOMESTIC
TANKS

STORAGE
TANKS

SKID
TANKS

**THIS
NAME**
LMC
LUBBOCK MACHINE CO. INC.

Means
**Low
Mileage
Cost**

LUBBOCK MACHINE CO., INC.

Lubbock, Texas, Ph. 4631, Box 1138

ask him to keep up his end, we have to keep up ours. We can't expect him to hold his head high if we have allowed some salesman to sell us some junk that we, in turn, are selling for price alone, and with him trying to fight the service problem on it.

It is easy for anyone to explain what's wrong. I am trying to explain a solution and the serviceman is it. In some large concerns they have specialized crews for service. I believe that every man from the top down is, or should be, a serviceman, regardless of the size of the organization. They are in the Ward Heater Co. I don't consider myself a top salesman, but I do think I'm as good a serviceman as any, and incidentally, my sales record hasn't suffered because of it. The sales just naturally come when you prove to people that the product you have is worth more to them than the money they have. They instinctively want to make a deal.

Hard Installation Problem Solved

As one more proof of what a serviceman can do, a certain salesman said a certain job couldn't be done. A serviceman knew it could. He had had experience. He was thoroughly trained. Pictures are shown here of a job where two upstairs bedrooms and bath had to be heated in an old existing house. The salesman said, "I'm sorry, but you will have to use electric heaters, it will be too big a job to put in anything else." The serviceman looked at the job, saw the recess in the kitchen downstairs, which was a vent for the

exhaust fan. And the job went in. Result? Perfectly heated home. Satisfied home owner. And a friend of that family from now on. Let's give our servicemen their due and make more Sales Through Service.

Don't Try Fooling the Ladies

Let me make one thing clear, I do not mean to belittle the salesman one iota. Good salesmen are worth their weight in gold. We need them. In some of our smaller organizations the proprietor is owner, salesman and serviceman, and his good wife does the book-keeping, answers the phone and is also a saleslady. And if any salesmen that are calling on LP-Gas dealers read this article, don't overlook the fact that she is a saleslady, and don't try to fool her. She is just as much concerned with all the appliances they sell as is her husband. And 10 to 1 she is just as good a saleswoman as he is a salesman.

If the husband is out on a job, don't feel you are wasting time by explaining to her the same merits of your product that you would to her husband. Remember she answers the phone. She gets complaints. If she is able to be a good serviceman, I mean woman, over the phone, she will be happy. And your product won't suffer by this. SALES THROUGH SERVICE will always result, but don't fail to take advantage of all sales campaigns, advertising and promotional schemes that your good judgment deems economically sound and proven, and then add to this your SALES THROUGH SERVICE.

Wilcolator helps ESTATE find the right answer



Questions and answers have built Estate ranges. Questions concerning everything that range users may require or desire; answers in the shape of advanced design, sound engineering and inspired styling.

That's why an Estate range offers a standard of performance, practical advantages and eye-stopping good looks that make sensational appeal at the point of sale!

And when it comes to assuring top oven performance and economy of operation, Wilcolator supplies the right answer: On Estate gas ranges, Wilcolator's "Uniflow" valve—with greater flow capacity than any other gas range control—assures *fast pre-*

heat and precise control of cooking temperature. On every Estate electric range, a Wilcolator electric control maintains exact oven temperatures, so that peak efficiency is obtained and maintained. And from the service viewpoint, Wilcolator's provision for replacing bellows assemblies without disturbing piping or removing the control from the range, means avoidance of costly service calls...more profit for you.

Wilcolator-controlled Estate ranges, in a word, have "all the answers"—provide *precision cooking at a touch of the finger tips.*

And that's the tip off: For top value that gives you an outstanding profit line, look for the name "Wilcolator" on the control.

ESTATE GAS RANGE MODEL 5034



Wilcolator
CONTROL

SOME WELL KNOWN GAS RANGES USING WILCOLATOR FOR PRECISION CONTROL

Autocrat	Kalamazoo
Coleman	Maytag
Copper-Clad	McClary
Crown	Prizer
Detroit Jewel	Real Host
Enterprise	Roper
Estate	Royal Rose
Garland	Tappan
Grand	Universal
Hardwick	Welbilt
Hart	Wincoft

Western Holly

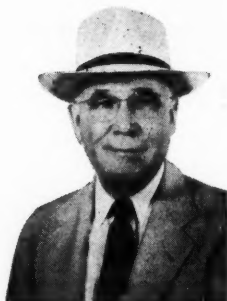
THE
Wilcolator
COMPANY

Elizabeth, New Jersey

Selling More Fuel At Lower Rates Will Net Dealer Larger Profits

TOO many LP-Gas fuel dealers look at the past rather than to the future. In the past they see the bottled gas business, almost free from competition, and with rates ample to cover investment charges and high operating expenses. They believe that situation is going to continue, and they make no attempt to visualize the future. In fact, they are sitting on their present operating practices and fail to see that, in doing so, they are asking for competition from more progressive operators.

These conditions are reminiscent of the electric utility business of 1910. Then, numerous little companies confined their efforts to small lighting loads on which they could get very high rates per KWH. On these they made a large percentage of profit per KWH sold, but delivered so few of them they earned comparatively few dollars. Naturally, competition came to them from more progressive operators, who went after the major lighting and power loads at much lower rates and much less profit per unit, but many more dollars in net earnings. They delivered in volume, and thus reduced their proportionate operating expenses. They also developed more dollars in net revenue per dollar invested, by using their facilities more hours per year.



By F. K. WOODRING

Representative of Reznor Manufacturing Co. and Pennsylvania Furnace & Iron Co., Clearwater, Florida

This also will be the future story in the LP-Gas fuel business. It might take only a few years, or 10 years, but eventually it will be brought about. In the meantime, many of our good friends are offering the needed invitation for such competition.

To exist, the gas fuel man of the future will need a large part of his business in the types of loads now served by the fuel oil man. Those are principally commercial, heating and industrial loads. He should keep in mind,

anything that can be done with fuel oil can be done better with LP-Gas, and sell everyone in the territory he serves with that idea.

These loads should be served through tanks large enough to require very few deliveries per year. This will remove much of the inventory from the dealer's bulk plant, and reduce the size of bulk plant required for a given amount of business.

The LP-Gas industry has the sales ability to place quality heating loads any time it decides to do so. To some, there is question as to how the customer would make payments on such large fuel deliveries, made several months in advance of the time it would be used. Why not sell him gas on six to 10 monthly payments? Most LP-Gas companies would sell a water heater or range on more time than that. Why not sell gas the same way?

In congested sections, where easements over private property can be secured, possibly the best answer is a large, company-owned

FLOOR FURNACE LOCATION

Proper location of floor furnaces can lessen hazards in home installations, it is pointed out in an article explaining their use in the heating of small houses, published in Technical Bulletin No. 10 of the Housing and Home Finance Agency.

The article explains the mechanics of the floor furnace and discusses safeguards in installation and location and the features essential for best performance.

tank with fuel piped to several customers, through individual meters.

Either answer simply transfers the dealer's gas inventory from his expensive bulk plant to the point of ultimate delivery at a time when it is most economical for the dealer to make delivery.

Just as it was with electric service, it will also be with LP-Gas service: The companies with the highest load factors on the equipment used will survive.

Tennessee Assn. Meets Aug. 14

The Tennessee LP-Gas Assn. will meet in Nashville on Aug. 14 at the Andrew Jackson hotel for a one-day session, according to T. G. Tackett. W. G. Petty, Sr., is president of the group.

G. T. Scott, chairman of the arrangement committee, has secured the services of Charles T. Evans, vice president of the Arkansas Power & Light Co., Little Rock, as principal speaker.

This annual meeting is expected to draw approximately 125 members of the association and will feature a special luncheon, banquet, and dance. A special invitation has been issued to industry women to take part in the meeting.

BASEBOARD HEATING SYSTEMS

Air temperatures with little variation from floor to ceiling and from room to room can be obtained in homes through the use of baseboard radiation systems regardless of the size or shape of the house, the American Society of Heating and Ventilating Engineers heard at its 56th annual meeting in Dallas last winter.

Satisfactory relative humidity indoors without the use of humidification devices was noted and the baseboard systems were observed to be free from inherent drafts, it was declared in a paper read at the group's technical session.

Anti-Trust Suit Filed Against Two Arizona Firms

The spotlight of industry attention shifted to Arizona last May, and LP-Gas leaders are still staring intently at that Southwest state, where two prominent butane-propane businesses have found themselves in the middle of anti-trust suits. U. S. Attorney Frank E. Flynn filed against Fannin's Gas & Equipment Co. and the Butane Corp. (both of Phoenix) on May 2, charging restraint of trade and illegal leasing practices.

Center of the government's case, which would have far-reaching effect on the entire LP-Gas industry should the Department of Justice prove successful in its prosecution, has been termed as strikingly similar to the recent Standard Oil Co. of California litigation, in which the government charged illegality in the leasing by Standard of service stations under terms requiring that the lessee purchase only Standard products for resale.

In the two Phoenix instances, Attorney Flynn has defined Fannin's and Butane Corp.'s allegedly illegal acts as the leasing of LP-Gas equipment to customers who must agree to purchase all of their LP-Gas from the leasing company. The practices in both cases are held to be in violation of the Sherman and Clayton Acts.

The leasing of butane and propane tanks and other equipment to customers under contracts calling for exclusive consumption of gas from the leasing company's facilities is in widespread habit throughout the industry. Its central purpose is to keep irresponsible, marginal operators from invading an established dealer's territory with inferior gas, haphazard safety precautions, and untrained personnel.

In the opinions of LP-Gas dealers and recognized insurance analysts, this method of operation has been a big factor in the minimizing of unsafe operations.

Will Hold LP-Gas Short Course At U. of California in Fall

A Western LP-Gas service school has been definitely set for Sept. 6-8 at the University of California, Berkeley, Calif. The three-day school, the only complete service school to be held in that area in 1950, will be under the auspices of the Liquefied Petroleum Gas Assn. and the University of California Department of Institutes, University Extension.

According to K. B. Jacobsen, LPGA West Coast secretary, the school is open to everyone interested in the LP-Gas industry. There will be three days of concentrated study to equip LP-Gas employes with the know-how that will enable them to do a better job for the customer and the company.

Comprehensive instruction by leading university and industry men will be featured with actual demonstrations and question-and-answer periods. Not only will the school serve the new LP-Gas men, but it will be a refresher course for older industry men, and will bring everyone up-to-date on the latest technical, service, and commercial developments, thus contributing to a more efficient and profitable operation.

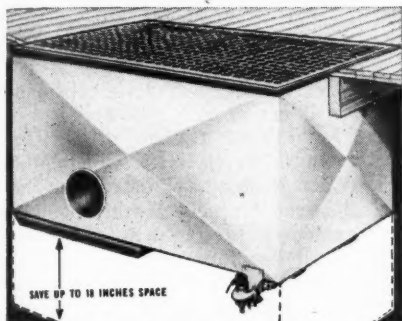
Casper Tooke, Propane Dealer, Dies in Shreveport, La.

Casper A. Tooke, 59-year-old Shreveport, La., business man and vice president of the Blytheville Propane Co., Blytheville, Ark., died suddenly, May 4.

For **LOW-COST LP-GAS HEATING** it's the **NEW**



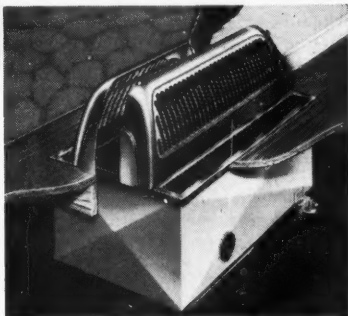
COLEMAN SHALLOFLOW



SHALLOFLOW FLOOR FURNACE—Flat Register

CHOICE OF MODELS—Flat Register or Dual Wall—38,500 or 50,000 BTU per hour capacity. Dual Wall fits beneath wall or partition and heats adjoining rooms at same time. Register heads to fit both long and narrow dimensions of the furnace. Send coupon for more information on Shalloflows.

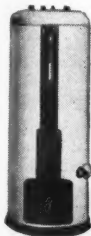
SHALLOFLOW—Coleman's *shallow* Floor Furnace with big-furnace performance. Extends only 22 3/4" below floor and is flood-proof to 19" below. Easy to install. No excavating costs, no pit, no basement needed; no air ducts; low-cost to operate. May be equipped with U-type Gas Control Valve to eliminate expensive plumbing.



SHALLOFLOW FLOOR FURNACE—Dual Wall Register

COMFORT COSTS SO LITTLE WITH A

Coleman



COLEMAN WATER HEATER

For LP-gas, butane or propane. 20, 30 and 45 gallon capacities with amazingly quick recovery rate. Automatic temperature control and 100% Automatic Safety Shut-off Valve.

The Coleman Company, Inc., Wichita 1, Kan.

World's largest manufacturer of home heating equipment

The Coleman Company, Inc.,

Dept. BPN-953-1,
Wichita 1, Kan.

Please have my Coleman distributor give me details on Coleman Floor Furnaces, Water Heaters and other Coleman appliances.

Name _____

Street _____

City _____ Zone _____ State _____

JULY — 1950

107

Converting Bus Engines To Burn Butane or Propane

WIDESPREAD INTEREST has developed recently in the use of butane and propane (LP-Gas) in converted gasoline engines to power tractors, trucks, stationary plants, and buses.

The utilization of LP-Gas for bus engines has aroused particular attention because several large municipalities or franchise-owned bus lines have either purchased LP-Gas-powered buses or are seriously considering so doing. As a result, there is much demand for a simple explanation of what is necessary to make a conversion and what benefits result when the conversion is complete.

The accompanying summary provides general facts.

BUTANE-PROPANE *News* carries a monthly department upon this subject and also publishes the "Handbook Butane-Propane Gases" which devotes an entire chapter to technical information covering conversions of gasoline engines.—Editor.

By **CARL ABELL**

EXPERIENCE in the operation of urban buses, and the most nearly comparable truck operations, indicates a very marked decrease in engine wear, which prolongs the period between major overhauls to 3 and even 4 times the mileage experienced with gasoline. Since the fuel is gaseous and clean burning, the engine operation is very much cleaner, with no di-

lution and very little pollution of lubricating oil. Oil drains are less frequent, and all available experience shows a great reduction in lubricating oil costs. General experience indicates that oil consumption is cut in half.

Another feature of LP-Gas which is particularly valuable in large industrial districts, and wherever air pollution is a public problem, is the freedom from noxious exhaust fumes. These are practically unknown with this fuel.

The base price of LP-Gas is lower than that of gasoline. With a standard gasoline compression ratio, fuel consumption with LP-Gas will be considerably higher than with gasoline — possibly as much as 25% higher. This loss of miles per gallon can be largely offset by raising the compression ratio. In some cases a gain can be shown.

With the standard gasoline compression ratio and a special LP-Gas carburetor of optimum size (slightly larger than for gasoline), the power output is approximately the same as with gasoline. The engine ordinarily runs smoother in the low speed range, and shows a little more power in the high speed range. Raising the compression

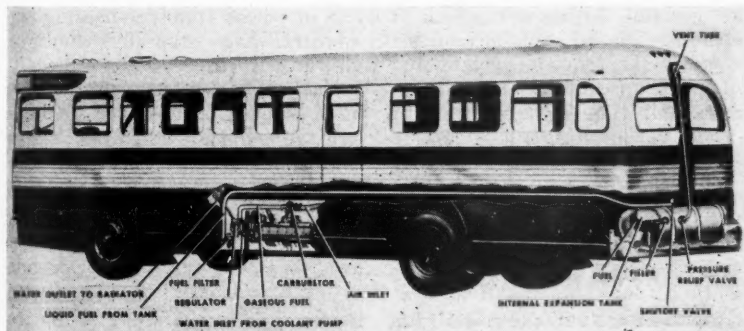
POWER

ratio of the engine increases the horsepower, as well as decreasing the fuel consumption. The compression may be raised one numerical ratio—i.e., from 6:1 to 7:1—without exceeding the factor of safety of the engine, as it was designed to withstand moderate detonation, which imposes an amount and type of stress which is more severe than will be experienced with the knock-free operation of LP-Gas in the higher compression ratio.

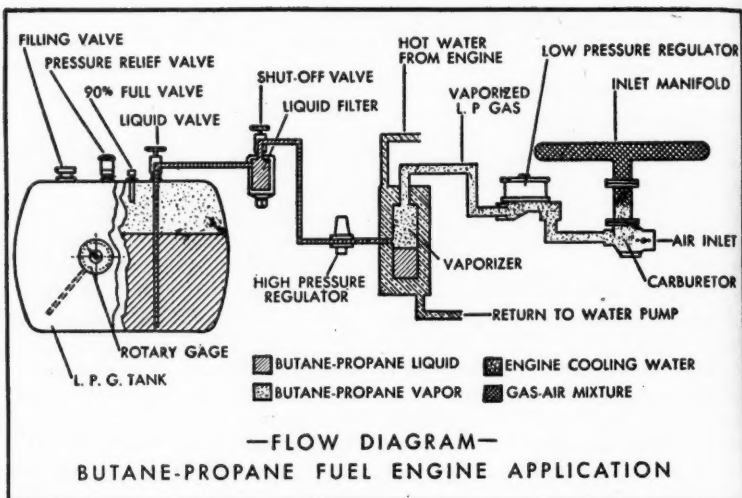
Conversion of a bus fleet to LP-Gas operation requires the installation of a fuel bulk storage tank of adequate capacity, constructed and equipped under the ASME code in conformity with National Board of Fire Underwriters Pamphlet No. 58. This tank will need to be equipped with piping and pump equipment to fill from tank cars or trucks, depending on how

you are to receive your fuel. It will also need to be equipped with a dispensing pump for filling the vehicle tanks. This should preferably be of the recording type, with quick connecting hoses for the delivery and vapor return lines.

Installation of LP-Gas fuel systems on buses generally requires an investment of between \$200 and \$300 per bus. For year-round dependability and full power, the system must include the means of vaporizing liquid fuel under full pressure and temperature control. This is done by means of a "converter," which is a series of pressure regulators and a heat exchanger. The "tank vapor" systems which make no provision for vaporizing the liquid other than atmospheric heat, are not always able to supply sufficient fuel from natural evaporation within the



Above is a standard Fageol Twin Coach equipped with special carburetor, regulators, and large manifold and high pressure fuel tank, which is typical for this kind of installation.



tank to maintain operation at low atmospheric temperatures.

If it is necessary to retain maximum volumetric efficiency, the carburetor, or "mixer," should have a throat somewhat larger than the gasoline carburetor which it replaces, as more space is required to meter the required weight and volume of gaseous fuel into the incoming air. The manufacturers of LP-Gas carburetors will be able to specify the correct sizes for vehicles when make, model and horsepower are known.

Gasoline manifolds have hot spots which are necessary to vaporize that fuel. This manifold heat is unnecessary and quite undesirable with LP-Gas. The best conversions include replacement of this gasoline intake manifold with

an unheated manifold designed specifically for gaseous fuel. If the gasoline manifold is used in the conversion, the heat should be blocked off the hot spot as completely as possible. This prevents loss of power from pre-heating the mixture, and generally shows a gain in economy.

Fuel tanks for buses present the most complex problem for such entire conversions. LP-Gas tanks conforming to the code—and they must conform—are not odd shaped as are so many gasoline tanks. They are cylindrical, with round ends, and while they can be made to any desired length and diameter, the chances of equipping an entire bus fleet with standardized tanks are quite remote. Two tanks may be required, due to space limita-

Butane-Propane
for
BUSES
CALLS FOR
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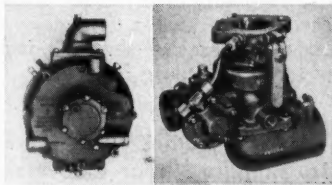


THE FINEST LP-GAS CARBURETION

EVER BUILT FOR BUS OPERATION

To meet the unprecedented demand for Ensign LP-Gas Equipment for buses, we are offering the Ensign Model "S" Butane Regulating Unit and Model "Xg" Carburetor. These units, designed for

more than 450 h.p., easily handle the largest bus with plenty of reserve. Then too, the carburetor, easily adaptable to automatic choke, is an all-position model—updraft, side and downdraft. Get all the facts today. Request Ensign Bulletins Nos. 7051 and 7078.



Model "S" Butane
Regulating Unit

Model "Xg"
Carburetor

ENSIGN

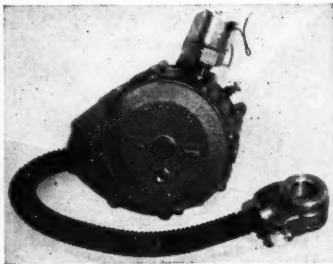
CARBURETOR COMPANY

7010 S. ALAMEDA ST., P. O. BOX 229

Huntington Park, California

Branch Factory: 2330 W. 58th St., Chicago 36, Ill.

"Pioneers in Efficient Carburetion" since 1911



Only Cyclone has 3-STAGE REGULATION

Cyclone 3-Stage regulation gives you LP-Gas carburetion performance that is superior in power and economy. The additional stage of regulation delivers dry gas to the carburetor that is more uniform in pressure and temperature. This makes possible a simple carburetor that is unaffected by altitude and weather conditions.

The result is outstanding power and economy on large engines. Results have already proven Cyclone can out-perform any carburetor on the market today.

There is a Cyclone for every engine:

- 1200A—3-stage—large engines
- 1200B—2-stage—cars and pick-ups
- 1200C—2-stage—for tractors

Cyclone

Equipment Corp.

10600 Prairie Ave. Inglewood, Calif.

tions, in order to carry enough fuel for a full day's operation.

Training drivers to handle the LP-Gas equipped vehicles is very simple. Aside from a changed technique in starting the engine, the operation is just the same as with gasoline. In addition, the driver needs only to know certain safety fundamentals, comparable to the similar safety training needed for gasoline operation.

For installation and maintenance, any good gasoline engine mechanic can quickly acquire the necessary understanding and skill. Most manufacturers of LP-Gas carburetors have service engineers available who are qualified to supervise conversions and train mechanics so they can carry on alone.

The hazards involved in handling LP-Gas are quite comparable to those of gasoline. Its vapor is invisible and inflammable, hence the specified precautions to keep it under confinement. If standard safety codes and practices are followed, and common sense is used in laying out the fuel storage system and ventilating the garage, no accidents need be encountered. On the street, it is a safer fuel than gasoline. The chances of rupturing a gasoline tank in a collision are much greater than those of breaking open an LP-Gas tank, which is designed so it can withstand internal pressure of several hundred pounds per square inch.

"Spud-In Guides" Are Made To Simplify Vapor Conversions

The American Carburetor Equipment Co. has been organized with J.

L. Grigsby, Sr., as president and J. L. Grigsby, Jr., vice president and general sales manager, both of Oklahoma City, Okla. Gilbert Woodrow is sales promotional manager of the firm.

Headquarters of the new company are at 1509 Exchange Avenue, Oklahoma City, where "spud-in guides," invented by Mr. Grigsby, Sr., will be manufactured and distributed. J & S carburetor equipment and the Mitchell John Deere vaporizer will also be distributed on a statewide basis by the firm.

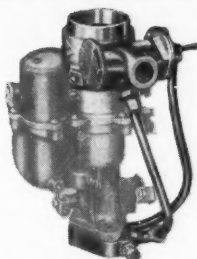
A set of 20 guides engineered to fit from 20 to 30 different types of gasoline carburetors, intended to take much of the guess-work out of conversions from gasoline to butane or propane gas operation of farm tractors, automobiles and other power equipment, is expected to simplify and greatly increase the number of such conversions in Oklahoma. The guides also will save time, labor and expense, Mr. Grigsby states.

"Each spud-in guide is made to perfectly fit a particular type of carburetor like a sleeve at the exact place and angle to tap the carburetor," said Mr. Grigsby. "With such a set of guides any mechanic can drill substantially all types of carburetors with little or no instruction. Heretofore, under old methods and with so many types of carburetors in use, it has been a large job to instruct and train mechanics in making vapor conversions from gasoline to LP-Gas power operation," Mr. Grigsby explained.

At present the firm has 53 dealers in the state, including farm tractor and implement dealers, machine shops and garages. Many of these have never done LP-Gas conversion work before.

The company has four trained field engineers who are calling on dealers

Public Preference Is Swinging To . . .



Butane-Propane Carburetion Conversion Equipment

Here's An Algas Dual Fuel Unit Employing Multi-Jet Principle

This Algas 1600 series dual fuel unit will fit all standard gasoline carburetors and provides both LP or gasoline operation. The Multi-Jet principle assures complete and instant mixing of fuel with air. For complete conversion, a 1500E converter and a 670 filter is required. ALGAS also produces 1400 series straight LP mixer where dual-fuel use is unnecessary.

Write or wire today for complete information.
Attractive ALGAS Dealer Franchises now open.

AMERICAN LIQUID GAS CORPORATION

1109 Santa Fe Avenue
Los Angeles 21, California

and those who are conducting and attending farm training programs for GI trainees and others. These engineers travel throughout the state in trucks and automobiles which have been converted from gasoline to LP-Gas fuel operation and are giving lectures and demonstrations to show the effectiveness of butane and propane as sources of smooth efficient and economical power.

Mr. Grigsby explained that the spud-in guides are being made available not only to implement dealers and mechanics but also to the general public. Patents on the guides have been applied for by Mr. Grigsby.

Dealers Waking Up to Field For Power Installations

That LP-Gas carburetion is "here to stay" is the conclusion of carburetor manufacturer R. W. Adair, fol-

lowing his return to Los Angeles from an extended trip into Mexico and half a dozen Southern and Midwestern states.

Mr. Adair, head of Dix Manufacturing Co., made his three-week flying tour in order to call on numerous dealers and interested prospects in the named areas.

Everywhere he went, Mr. Adair reports, the interest in LP-Gas carburetion was tremendous. Everyone is either "in carburetion" or wants to get "in."

Mexico, he reports, is ready for carburetion. All they need is instruction and equipment. He looks for a big increase in power south of the border.

In Texas, Louisiana, Oklahoma, Mississippi and Tennessee interest in butane and propane for use in trucks and tractors is at a peak, Mr. Adair found.

The reason for this increasing in-



W. W. Dick, Shreveport, La., long-time dealer in LP-Gas carburetors, beside one of his new service trucks which he uses as a traveling workshop. This truck is provided with an 80-gal. fuel tank.

terest is due to several factors. First is the low fuel cost that now exists. Farmers can buy LP-Gas for one-third the price of gasoline in many areas. They like the fuel, too, when they get to know it.

One dealer in Louisiana, W. W. Dick, of Shreveport, who has been a Dix distributor for several years, is getting three times as many requests for conversions as he did six months ago, requiring him to increase his crew of men. In an area near Tulsa over 900 units were put on in the last six months, according to local dealers.

Fuel Tanks Are Needed

The great need now is for tanks—for both trucks and tractors. There is a shortage in tanks properly designed and built for the various makes of tractors, Mr. Adair found, and they are high in price.

Taxes is another problem that now faces many states. There needs to be a more equitable tax on LP-Gas as a motor fuel in many states, it is believed. Its progress as a motor fuel is being retarded in many states because of unfair tax practices.

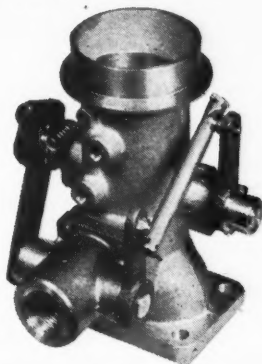
The oil companies are to be congratulated on the way they have promoted LP-Gas as a motor fuel, Mr. Adair feels. The producers in the South and Midwest are doing an outstanding job to further its use for this purpose.

Motor Bus Manufacturer Thinks Propane Best Fuel

The Twin Coach Co., Kent, Ohio is now making a complete line of standard motor vehicles for operation with 125 octane propane fuel.

Propane is reputed to be the world's lowest priced motor fuel. It is anticipated that its use will greatly reduce

CENTURY



CENTURY 3C Dual Throat Carburetor with POWER CONTROL TUBE

This exclusive feature gives correct power mixture on Dual Throat LP-Gas Carburetors with single power adjustment. Perfect distribution to all cylinders is assured—with no deflection of fuel to one side of manifold.

Notice to Ford Owners

We now have a complete line of LP-Gas carburetors for all Ford trucks and bus motors with Ford ignition systems.

Century Gas Equipment Co.
Lynwood, California



The "supersonic" car of tomorrow which is propane-powered and has been used for two years by L. J. Fageol of Twin Coach Co., Kent, Ohio, as a private automobile. The engine develops 275 h.p. and has been timed at 135 miles per hour. Mr. and Mrs. Fageol are shown in the picture.

operating costs of the nation's vast bus transportation systems.

The new Twin Coach propane-powered line consists of seven standard bus models of 34 to 58 passenger ca-

capacity. These will be driven by Fageol Twin Coach engines with a 10 to 1 compression ratio, according to F. R. Fageol, chairman of the Twin Coach board. The Fageol engine was designed six years ago by L. J. Fageol, company president, in anticipation of present availability of high octane fuels. It is capable of operating at a 14 to 1 ratio if desired.

Garretson Carburetion System



Automatically supplies an engine the **Most Powerful Mixture It Can Burn** after making one simple adjustment at the time of installation. Automatically leans mixture for medium and light loads. Designed for years of service-free performance.

The Garretson System is the Original, Complete, Low-cost Conversion.

Highest quality Easiest installed
Either cylinder brackets or permanent tanks supplied with complete kits.

Manufactured & Distributed By:
General Tank & Steel Corp. Roswell, N. M.
Darlingas, Inc., Pratt, Kansas
Valley Industries, Inc., Mt. Pleasant, Ia.

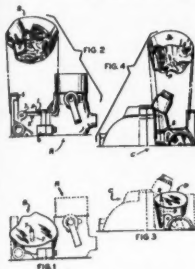
Claim Savings on Price

Average savings of up to two cents per mile on fuel, alone, as compared with diesel or gasoline coaches, are reported by the manufacturer. It is expected that the use of propane will permit many transit properties now showing substantial deficits to return to profitable operation.

Another advantage claimed for propane is the doubling of time between engine overhauls. Propane is clean burning and leaves very little carbon deposit.

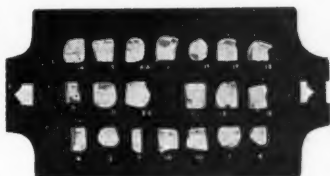
The supply of propane far exceeds the foreseeable demand, according to Mr. Fageol. Delivered fuel costs (before taxes) average from 25 to 50% less than gasoline and from 10 to 40% less than diesel fuel in Mid-Continent

ATTENTION: Butane Operators and Tractor Dealers



Price: **\$20.00,**
F.O.B.,
Oklahoma City,
Okla.

Patent Pending



YOUR DREAM HAS FINALLY COME TRUE

You can now buy Spud-In Guides for tapping into the -venturi of gasoline carburetors to convert them to LPG.

Don't take the chance of drilling the carburetor wrong when in one minute you can drill it correctly with the simple Spud-In Guide. These guides will last forever. They come in a complete set of 20.

AMERICAN CARBURETOR EQUIPMENT CO.

1509 Exchange Ave., Oklahoma City, Okla.

Santa Fe "Custom-Built" LP-Gas Tractor & Truck Tanks

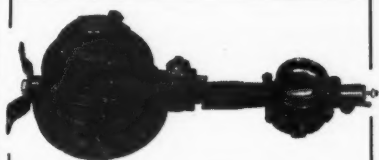


Santa Fe "Custom-Built" LP-Gas Tanks are available for any Tractor or Truck requirement. Designed for fast, simple and inexpensive installation. Many stock models available, including brackets—others fabricated to specifications. Licensed and bonded in states where required. Tanks comply with N.B.F.U. requirements. U. L. approved valves—excess flow protection. Highest standards of engineering, materials, and workmanship.

Write for specifications and counsel.

Santa Fe Engineering & Equipment Co.

3814 Fruitland Ave. • Maywood, Calif.



In Summer you want CONTROLLED WATER TEMPERATURE

Too much heat thins out fuel mixtures . . . which means loss of power and economy in LP-Gas engines.

With the DIX unit temperature is controlled at all times to give ideal conditions.

Remember . . . ONLY Dix Has It!

Dix Manufacturing Co.

3447 E. Pico Blvd. Los Angeles 23, Calif.

Export: 301 Clay St., San Francisco

sections of the country. Differentials in certain locations are somewhat smaller due to transportation costs.

Leading refiners are said to have indicated willingness to supply propane, once a waste product of the refining industry, at approximately 2½ cents per gallon at the refinery on long term contracts.

Outstanding among other advantages claimed for propane is the fact that it is odorless. Its use will eliminate exhaust fumes which are now one of the main public complaints against buses. Engines, operating on propane, are said to be smoother running than with any other fuel. Ping and spark knock is completely eliminated by propane.

Farmers Use Converted Tractors For Many Power Applications

FARM equipment dealers in several areas of central Illinois have for the past two or three years been promoting the sale of tractors equipped for burning butane or propane rather than gasoline. While the initial cost of the tractor is slightly more, they have stressed the great saving over a period of time, resulting both from the immediate outlay of cash for gas and for the greatly lessened maintenance costs of the tractor.

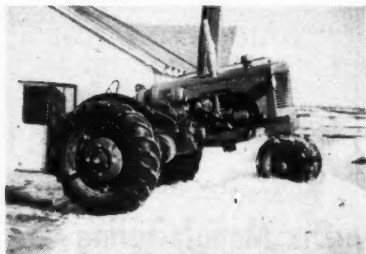
Among these dealers is the Shaff

By **HARRY L. SPOONER**

Implement Co., Rural Route No. 2, Urbana, who have the franchise for the M & M tractor. This progressive concern sold its first butane-fueled tractor in 1947 and has made many sales since. The tractors sell for \$247 more than those equipped to burn gasoline.

In their promotional work, they stress the butane operated tractor as having more power, longer life and lower maintenance cost. They have operated a demonstrator for three years with no maintenance cost whatsoever, not having even replaced a spark plug. They report that every customer sold has expressed complete satisfaction, with an increase in power of 15% to 17% and a saving in cost of operation of 15% over the gasoline-powered machine.

One of the first customers sold was the Scoggin brothers, who operate a 585-acre farm near Champaign. (Ur-



LP-Gas-powered tractor owned by Clarence Dolhring, Windsor, Ill.

ana and Champaign are adjoining cities.)

The brothers plow, disc and cultivate 375 to 425 acres of land yearly in corn and soybeans. They plow, disc and combine 90 to 110 acres yearly of oats. They raise from 20 to 30 acres of hay yearly, which is baled. This plowing, discing, cultivating, combining and baling is done with the tractor. In addition they do considerable belt work.

"We use about the same number of gallons of butane per day per plow as we formerly did of gasoline," says Russell Scoggin, "but this costs from 8 to 12 cents per gallon less than the gasoline, and, what is more, we secure about 7 hp. more power in the same tractor than with gasoline. From our experience so far, we expect to lower maintenance costs on pistons, rings, valves, etc.

"In doing our work, we haven't seen the slightest trace of smoke from the exhaust even in some very hard plowing we did the past spring. We proved conclusively that our butane tractor is more powerful on a corn sheller than an identical one using gasoline. So far our fuel has been 80% propane and 20% butane. However, we feel we would like to try a mixture of 40% or even 50% butane for more Btu's and lower volatility but at present our supplier doesn't handle such a mixture because most of his gas is used for household appliances."

The Scoggin brothers use "Skellgas" and secure it from Gas Service Co., Urbana, which has at this time about 66,000 gallons of storage.

Another "power" farmer is Clarence Doehring, whose 500-acre farm is located near Windsor, Ill. Mr. Doehring is one of the newer users of butane gas in a tractor. He plows 400 acres and cultivates 300 acres

annually. He also does his combining, corn picking and hay baling with the tractor and in addition uses it to grind cattle feed. He says the cost of butane is only half that of gasoline. He secures his gas from Acme Butane Co., Mattoon, Ill.

CALENDAR

1950

July 14—Minnesota Petroleum Gas Assn. Hotel Duluth, Duluth, Minn.

July 24-26—Mid-Continent LP-Gas Service School. University of Kansas. Lawrence, Kans.

Aug. 14—Tennessee LP-Gas Assn. Annual Meeting. Andrew Jackson Hotel. Nashville.

Aug. 16-18—LP-Gas Service School. Purdue University. Lafayette, Ind.

Aug. 21-22—Kentucky LP-Gas Assn. Annual Convention and Trade Show. Seelbach Hotel. Louisville.

Sept. 13-15—National Petroleum Assn. Hotel Traymore. Atlantic City, N. J.

Sept. 18-19—National Butane-Propane Assn. District meeting. Hollenden Hotel. Cleveland, Ohio.

Oct. 2-6—American Gas Assn. Annual Convention. Atlantic City, N. J.

Oct. 2-6—Gas Appliance Manufacturers Assn. Exhibition of Gas Appliances and Equipment. Atlantic City, N. J.

Oct. 5-6—LPGA North Eastern District Meeting. Ambassador Hotel. Atlantic City, N. J.

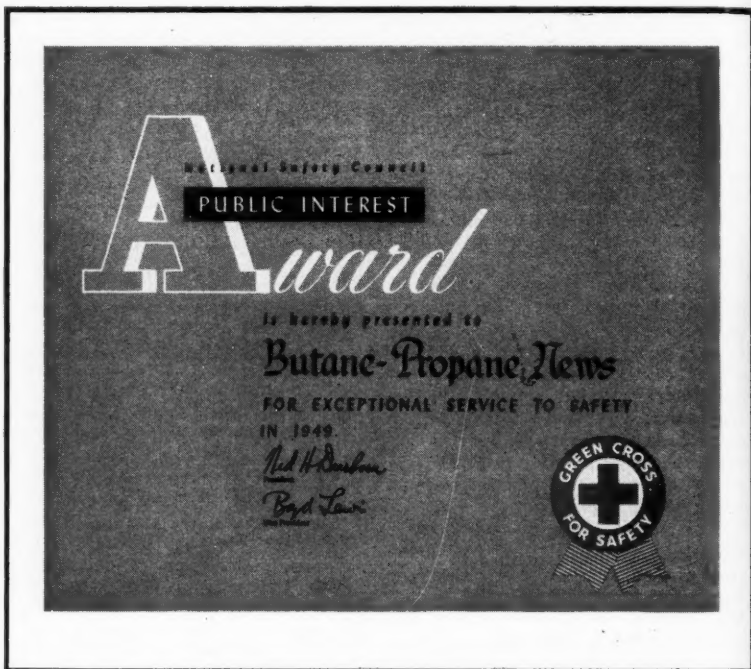
Oct. 16-20—National Safety Congress. Chicago, Ill.

Nov. 6—North Dakota LP-Gas Assn.

1951

Feb.—Indiana LP-Gas Assn. Annual Meeting and Trade Show.

Mar. 26-28—LP-Gas Service School. University of Minnesota. Farm School. St. Paul.



Butane-Propane News Receives Award for 1949 Safety Issue

Testifying to the importance and accuracy of the June, 1949, safety issue of BUTANE-PROPANE News, the National Safety Council has announced that this issue was presented with one of its 1949 Public Interest Awards for contributing to national safety and for playing "a major part in bringing the national accident death rate to the lowest point in history."

The National Safety Council award is made annually to public information media for exceptional service to safety.

This is the second safety award given BUTANE-PROPANE News within the last year. In 1949 this magazine was given a first award for editorial achievement by "Industrial Marketing" for its June, 1948, safety issue. That award was made for the best original research among industrial papers in the United States in competition with more than 500 other business publications.

Portland, Me., Firm Convention Breaks Previous Records

With 212 registrations and 368 banquet meals served, Utilities Dis-



UNBELIEVABLE . . . BUT TRUE!
the NEW EMPIRE "LO-BOY" Gas
Floor Furnace is ONLY 24"
DEEP, with a 70,000 B.T.U.
INPUT!*

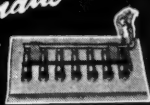
*Floor Opening 30 5/16" x 34 5/16"

EMPIRE

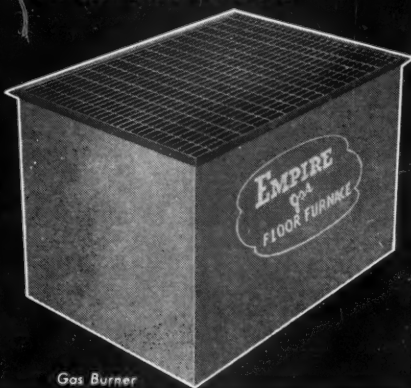
"Lo-Boy" Floor Furnace

Here's a completely new EMPIRE "Lo-Boy" . . . only 24 inches from top to bottom, requires a minimum of floor space . . . yet gives maximum efficiency with a 70,000 B.T.U. input. Equipped with the famous "Thriftmatic" Burner for greater economy and efficiency of operation with all kinds of gases.

"Thriftmatic"



Gas Burner



Another GREAT, NEW PROFIT-MAKER
added to the

Famous EMPIRE Line of Gas Appliances

For increased sales . . . greater profits . . . it's the new 70,000 "Lo-Boy". Easily installed with a minimum of service . . . this new "Lo-Boy" gives clean, efficient, low cost heat for homes, offices or shops.

Empire Stove Co.
BELLEVILLE, ILLINOIS

Manufacturers of Gas Heating and Cooking Appliances

- Circulator Heaters
- Floor Furnaces
- Recessed Heating
- Gas Ranges

tributors, Inc., broke all attendance records at its annual "Utility-Gas" dealers convention April 12-13, according to J. D. Wood, advertising manager.

Among the speakers delivering talks at the meeting were the following: Peter Anderson, UDI president (welcoming address); Larry Holman, merchandise manager, UDI; Cecil M. Dunn, vice president, Estate Stove Co.; Arthur M. Newman, sales manager, Glenwood Stove Co.; C. Edwin Bartlett, Ruud Manufacturing Co.; E. Martin Anderson, treasurer, UDI; George Kelley, gas sales manager, UDI; L. T. Ash, sales engineer, Coleman Co., Inc.; Del M. Pitman, sales manager, J. C. Pitman & Sons Sales Corp.; D. C. McDermand, eastern regional manager, Hamilton Manufacturing Co.; Sol Weill, eastern sales promotion manager, Geo. D. Roper

Corp.; C. A. Spiegel, sales promotion manager, Servel, Inc.; Stanley Bowman, Elmer Wheeler Sales Institute; Roy E. Wright, director gas sales, NEGEA; J. D. Wood, UDI; John W. Barndollar, Cappel-MacDonald Co.; Lex King Souter.

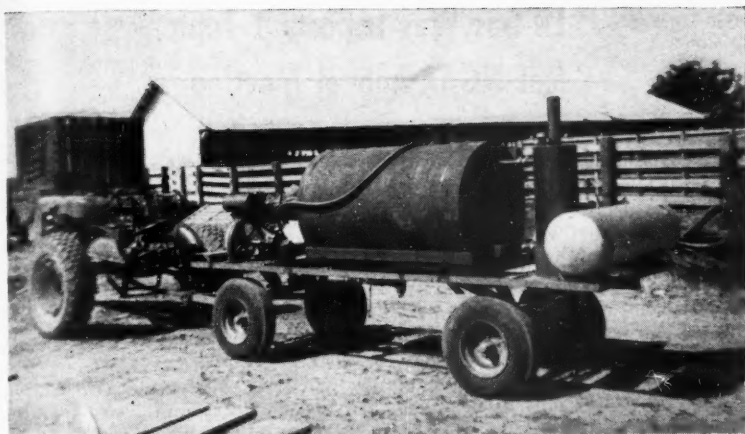
The convention, held at the Lafayette hotel in Portland, had many displays of LP-Gas appliances. On the last evening a banquet, floor show, and dancing were featured.

Butane Heats Molasses For Stock Feeding Job

Frank Tose, manager of the American Gas Co., Hanford, Calif., has developed a heater for molasses used at the Costa Brothers' 250-acre ranch of diversified farming in Kings county. Because of its high food value, the molasses is sprayed on the hay or



Stanley Bowman, luncheon speaker, stressed the theme of the importance of competitive selling in the high standard of living today. At the speakers' table (left to right) are: George Kelley, gas sales manager; Mrs. Esther Emmons, UDI home economist; J. D. Wood, advertising manager; Mr. Bowman, and Peter A. Anderson, UDI president.



Tank in which molasses is heated by LP-Gas before being sprayed on cattle feed is mounted on truck so it can be moved from barn to barn.

grain feed for approximately 100 head of cattle.

However, due to the thickness and difficulty in handling the molasses during cold weather, it became necessary to heat the molasses to the thin consistency of about No. 10 SAE oil. Faster feeding operations, less man-hours, and year-round feeding is the result.

The molasses is heated in a 280-gal. tank by a 20-gal. water tank and a 50-gal. butane tank, using a small regulator at low pressure. The water heater has a 40,000-Btu burner and is equipped with a Grayson thermostat which keeps the water at 140°. Circulation of hot water through the molasses tank and water heater is by gravitation. No pump is needed. The molasses tank is filled after each feeding and is kept in operation 24 hours a day.

When thinned, the molasses is pumped out of the tank by a 20-in.

pump powered by a 6-h.p. Wisconsin gasoline motor. Fifteen feet of hose is used for spraying. Equipment is mounted on a 10-ft., 4-wheel trailer which can be pulled from barn to barn.

Furnishing the fuel for this job is Cities Fuel Corp., Fresno, Calif., suppliers and transporters of LP-Gas on the West Coast.

Esso Standard Appoints Breen Head of LP-Gas Sales

C. A. Breen has been appointed manager of the liquefied gas sales division of the Esso Standard Oil Co., it was announced recently.

Mr. Breen, associated with Esso and its affiliates for 26 years, had been assistant manager of cargo and marine sales. Previously he was with Sylvester Oil Co., an Esso marketing affiliate, for 12 years, serving as president from 1944 to 1949.

LP-Gas Was Important Topic at NGAA Annual Meeting

By CRAIG ESPY

FIGURES were presented at the 29th annual convention of the Natural Gasoline Assn. of America, held in Fort Worth, April 24-26, to show that the liquefied petroleum gas industry now supplies as many homes in the United States as does the manufactured gas industry.

This fact was cited at the conference by Kenneth Rugh, manager of the Philgas Division, Phillips Petroleum Co., who said that gas utilities used 240,000,000 gallons of LP-Gas for gas manufacture in 1949. (Page 66, June issue.)

On the same day at the conference C. B. Johnson, Jr., chief engineer of the Chicago Corp., of Corpus Christi, presented a summary of one injection-reproduction cycle of experience of his company in underground storage of propane in the Carthage Field of Panola county, Texas. The objective was to withdraw from storage, when needed, a saleable liquid product requiring no reprocessing. The results of the project were highly successful, according to Mr. Johnson, who drew the following conclusions:

1. The LP-Gas could be withdrawn, at will, from storage to supplement daily production.

2. The volume recovered by uninterrupted "natural flow" indicates a much higher recovery efficiency when

water-flood or mechanical pumping means are provided.

3. From the standpoint of economics, the underground storage of LP-Gas appears to have been successfully accomplished.

Howard Felt, vice president, Warren Petroleum Corp., Tulsa, reviewed and discussed the plans for the \$5,000,000 advertising program being sponsored by the Natural Gasoline Assn., the Liquefied Petroleum Gas Assn., and the Gas Appliance Manufacturers' Assn. After pointing out the need for this promotion, due to electrical competition, Mr. Felt discussed the formula by which individual producers and others participate financially in the program. He also showed a slide of the first advertisement which will appear soon in national farm and home media.

H. A. Montgomery, of Warren Petroleum Corp., Houston, presented a paper on "Modifications in LPG Test Methods." He stated in this paper that the NGAA had rewritten the "Vapor Pressure Test Method for LPG" and has adopted a modified Reid bomb for the purpose. He also reported that the Cobalt-bromide test for moisture content of LP-Gas had been vastly improved. He told about the research

HIGH QUALITY PRODUCT



PHILLIPS 5-WAY PROFIT PLAN

1. High Quality Product
2. Dependable Supply
3. Experienced Engineering
4. Practical Marketing Help
5. Operational Assistance

An Important Aspect of Phillips 5-Way Profit Plan to Help Bulk Plant Operators Build More Successful Businesses!

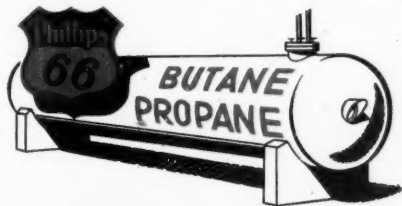
● Phillips scientific research processes . . . improved fractionation processes . . . constant checks on all phases of production, assure a high-quality product. You know what you're getting . . . and what you're selling, when it's Phillips 66 LP-Gas.

And in other important ways, Phillips "extras" are an aid to bulk plant operators. You get the advantage of Phillips merchandising experience in planning marketing promotions. You have Phillips staff of trained engineers to call on, without cost, to help with distribution, or operating problems. And, at all times, Phillips dependable supply enables you to give your customers prompt service, summer and winter.

When you buy gas for resale, be sure it's Phillips 66 LP-Gas!

PHILLIPS PETROLEUM COMPANY

PHILGAS DIVISION • SALES DEPARTMENT
BARTLESVILLE, OKLAHOMA



District offices in Amarillo, Tex.,
Atlanta, Ga., Chicago, Ill., Denver, Colo.,
Des Moines, Ia., Detroit, Mich.,
Indianapolis, Ind., Jackson, Miss.,
Kansas City, Mo., Milwaukee, Wis.,
Minneapolis, Minn., New York, N. Y.,
Raleigh, N. C., St. Louis, Mo.,
Tulsa, Okla., Wichita, Kan.

project conducted at the University of Texas by which a simple and practical method has been developed for testing the sulphur corrosive content of LPG. He also told of the adoption by the association of the Chain-o-matic principle for testing specific gravity.

A. J. Miller, Phillips Petroleum Co., Bartlesville, presented a paper on "The Accuracy of Low Temperature Fractional Analysis of Liquid Hydrocarbon Mixtures." This report summarized the results obtained in an NGAA-sponsored project in the analysis of prepared liquid samples.

Joe F. Wood, Skelly Oil Co., Pawhuska, discussed a new bomb and a revised method for making vapor pressure determinations in a paper entitled, "The Vapor Pressure of LP-Gas."

A Training Job to Do

W. G. Wiegel, personnel director of Lone Star Gas Co., discussed "Industry's Training Job." E. A. Koenig, general superintendent, Texas Eastern Transmission Corp., dealt with "Centrifugal Compressors," and Paul Kayser, president, El Paso Natural Gas Co., spoke on cooperation between the oil industry and regulatory bodies with respect to the marketing of residue gas. B. R. Carney, manager of the gas division, Warren Petroleum Corp., Tulsa, spoke on "Natural Gas Liquids—The Unlucky 13% of America's Petroleum Resources."

Concluding sessions of the conference which drew registration of over one thousand were given over to an "Information Please" pro-

gram presided over by J. H. Dunn, president, Shamrock Oil & Gas Co., Amarillo, as moderator.

This year's Hanlon Award was presented to Dr. Donald L. Katz, professor of chemical engineering at the University of Michigan (see Page 132, June issue.)

The meetings were presided over by James E. Pew, Sun Oil Co., president of the association; R. A. Worley, The Parade Co., Shreveport; M. L. Mayfield, Hiwan Oil & Gas Co., Fort Smith, Ark.; and W. F. Matheny, Sid Richardson Gasoline Co., Fort Worth.

The Natural Gasoline Supply Men's Association presented the only non-technical session of the convention. This was in the form of a "Chuck Wagon" dinner, followed by entertainment.

All Officers Re-Elected

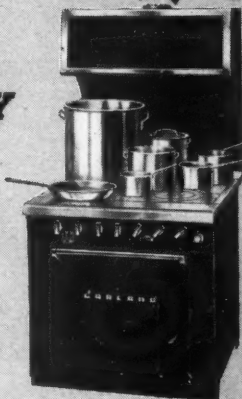
The following officers of the association were re-elected: James E. Pew, president; vice presidents: John F. Lynch, La Gloria Corp.; F. M. Perry, Cities Service Oil Co.; T. L. Taggart, Standard Oil Co. of California; Albert H. Weil, United Gas Pipe Line Co.; William F. Lowe, secretary.

Officers elected by the Natural Gasoline Supply Men's Association were L. L. Dresser, Dresser Engineering Co., Tulsa, president; Dallas S. Dean, American Air Filter Co., Inc., Tulsa, 1st vice president; M. E. Duncan, Johns-Manville Sales Corp., Tulsa, 2nd vice president; M. A. Ellsworth, The Fluor Corp., Ltd., Tulsa, treasurer; William F. Lowe, secretary.

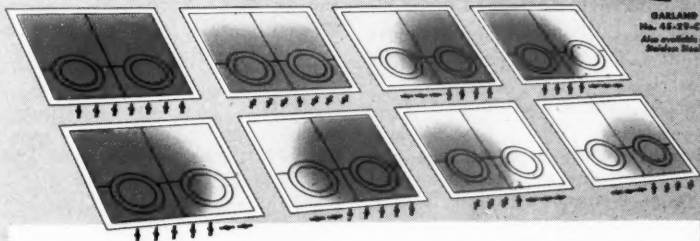
1★2★3★4★5★6★7

**Front Fired Burners
Give Unequaled Top
Heat Flexibility! ONLY**

the GARLAND
leader Has This Feature



GARLAND
No. 45-29-CX
Also available in
Stainless Steel



GREATEST FEATURE ON ANY HEAVY DUTY GAS RANGE! Seven front fired burners that distribute controlled heat to every part of the cooking top! **Seven front fired burners** that permit an infinite number of heat variations all over the hot top.

Yes, Garland—and only Garland—has this great feature! Garland is the most flexible, the most practical of all Heavy Duty gas ranges! Think of the time saved—think how much

faster, how much better the chef can prepare meals when he has the right degree of heat when he wants it, where he wants it.

And remember: this is only one of the many big features that make Garland the leader in sales, the leader in value! It pays to feature the leader! Increase your sales with Garland!



ALL Garland units are available in Stainless Steel and equipped for use with manufactured, natural or L-P gases.

GARLAND * **THE TREND IS TO GAS**
FOR ALL
COMMERCIAL COOKING

Heavy Duty Ranges • Restaurant Ranges • Dinette Ranges • Broilers • Deep Fat Fryers
Toasters • Roasting Ovens • Griddles • Counter Griddles

PRODUCTS OF DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN

REGD. U. S. PAT. OFF.

PRODUCTS



Baseboard Radiant Panels

American Radiator & Standard Sanitary Corp., P. O. Box 1226, Pittsburgh 30, Pa.

Model: Type R and RC.

Application: Type R is a radiant-heat model while Type RC combines both radiant and convected heat and is designed for use where heating requirements are above the average.

Description: Baseboard radiant panels may operate with a boiler fired by liquefied petroleum gas. They are normally installed only along a portion of the outside wall, but may cover all of the baseboard area in the room if necessary.

Constructed of cast iron, the panels can be partially or fully recessed, normally to the depth of the lath and plaster. Connections and piping are easy to reach; valves are enclosed, yet quickly accessible. Special matched accessories are provided to conceal fittings that connect the panel assemblies.

Gas-Fired Boiler

Bastian-Morley Co., Inc., La Porte, Ind.

Model: 2-WG Deluxe Boiler.

Application: Due to being completely enclosed, this model is particularly suitable for installation in finished basements and playrooms. Also practical for circulating hot water radiant heat installations, whether panel, baseboard, or conventional radiation.

Description: The 2-WG is completely assembled at the factory and includes the following equipment: "Basmor" gas valve with hydraulic limit control; relay gas valves and recycling manual control switch; transformer; complete automatic shutoff (thermostatic pilot); gas pressure regulator; manual shutoff valve; heavy insulation; draft diverter. The steel jacket



is of green, baked enamel finish.

The AGA-approved boiler is available for operation on all gases—including LP-Gas.

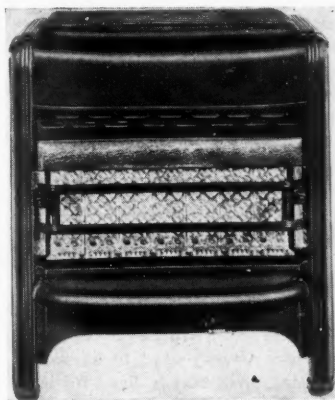
Gas Heater

Adams Bros. Mfg. Co., Inc., 1500 W. North Ave., Pittsburgh, Pa.

Model: Cheerfulator No. 75.

Description: A fully vented, radiant-type circulating heater which is finished in standard brown porcelain enamel. Ivory porcelain enamel available on special order.

Automatic temperature control and safety shutoff (Robertshaw Unitrol) available, factory-tested and mounted. Heating capacity is up to 40,000 Btu's per hour. The reverse-flow tubular-type heat exchanger is utilized in this AGA-approved circulator.

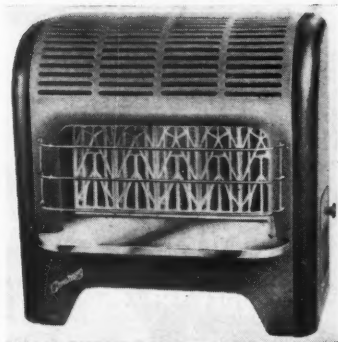


Radiant Circulator

Armstrong Products Corp., Huntington, W. Va.

Model: 925-RB.

Description: AGA - approved, the



heater is finished in two-tone brown porcelain enamel; the hearth and dress guard are of heavy chrome plate.

The cast iron burner is equipped with a new type of air regulator specially designed to resist dust closure tendencies. Valve is located behind side access door, maintaining ease of operation but eliminating possibility of accidental turn-on.

For LP-Gas, the circulator has a Btu rating of 25,000. It is 19 in. wide, 11 in. deep, and 19 in. high.

Floor Furnace

Bryant Heater Div., Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland 10, Ohio.

Model: No. 365 Floor Furnace.

Description: This factory-assembled gas-fired unit is designed for suspension at floor level. The overall depth is 25 in. The lower 6 in. of the casing is completely water proof for protection of controls and burners.

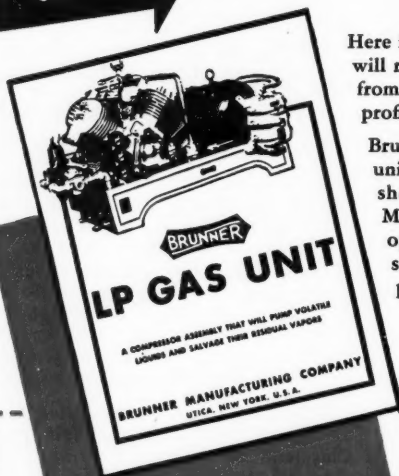
The furnace is available in three sizes: 35,000, 50,000 and 65,000 Btu's per hour input. A choice of manual or fully automatic controls is avail-

**500 TO
1000 LBS.
OF LP GAS
SAVED**
from every car
unloaded

...if you use



TANK UNLOADING UNITS



Here is a compressor-pump assembly that will recover *more* of the liquid and vapor from every tank car... producing an *extra* profit that would otherwise be lost.

Brunner liquid petroleum gas transfer units actually pay for themselves in a short time from this *extra* recovery. Many years of dependable economical operation is another bonus in the selection of Brunner. Hundreds in use prove these facts. Use the coupon.

**BRUNNER
MANUFACTURING CO.**
Utica 1, New York, U. S. A.

FREE:

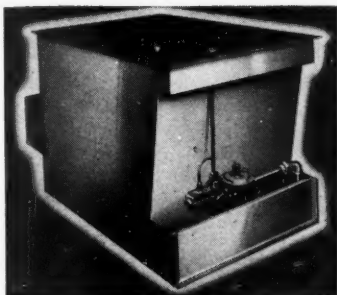
This 20 page Guide to
better LP Gas Transfer

Diagrams on piping, wiring
and bottling plus technical
data required by every opera-
tor. Already used to advant-
age by hundreds. Send for it.

Name _____

Address _____

City and State _____



able with either a floor-type or dual-wall register.

Service operations and adjustments are readily accessible from above the floor.

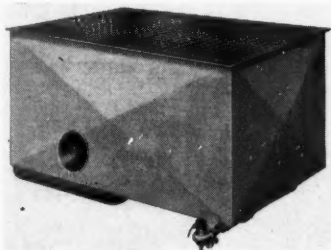
Floor Furnace

Coleman Co., Inc., Wichita 1, Kan.

Model: Shallowflow.

Description: The furnace requires neither basement nor excavation for installation. It is only 22 $\frac{3}{4}$ in. deep. Fitting into floor with only the register at floor level, the furnace takes no room space.

Features include: Register 84% open allowing free flow of air; asbestos sealed combustion chamber door; heavily zinc coated steel casing and inner walls; removable double



inner walls; and heavy gauge metal construction.

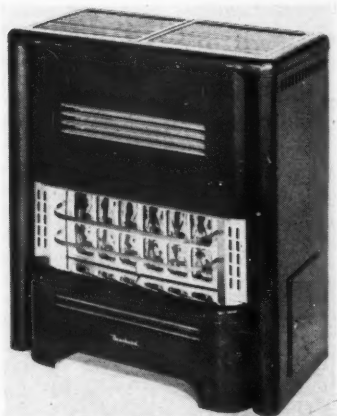
Available with 38,500 Btu input or 50,000 Btu input. A dual-wall Shallowflow to deliver heat to separate rooms is also available with 12-in. high register.

Vented Heater

Dearborn Stove Co., 1700 W. Commerce St., Dallas, Texas.

Model: DVRC-45.

Description: An outstanding fea-



ture of this AGA-approved heater is the "High-Crown" burner with two interior baffles which insure correct mixing for perfect combustion and an even flame. The burner also features an adjustable air shutter, extra large air mixer, long venturi, and extra ports with more port area.

Fully automatic temperature control is provided by the "Unitrol" control. The Unitrol not only serves as a temperature control but is a 100% safety pilot. The sealed, dual heat exchangers give a maximum

heating surface and are designed to increase heating capacity.

Finished in brown, mahogany-like baked-on enamel, the heater has an input rating of 45,000 Btu's. Specifications: 31 in. high, 29¼ in. wide, and 18-5/16 in. deep.

Recessed Heating System

Empire Stove
Co.,
Belleville, Ill.

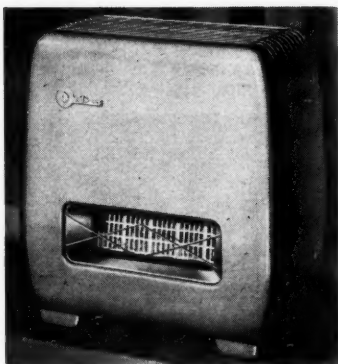
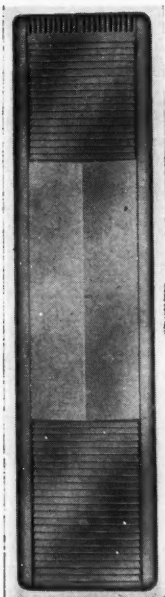
Description:

Among new developments in this model are the following: Completely enclosed units for cooler walls, additional safety; new "spill chamber" prevents products of combustion from discoloring walls; concealed controls increase beauty, prevent accidental shut-off; new "T" type version of Empire's "Thrifty-matic" burner.

The system, raised from the floor, will not interfere with wall-to-wall floor cov-

ering. Design permits simple installation between standard 16-in. studs, in walls ranging in thickness from 4¾ in. to 5½ in. without furring.

The system is available in units of 25,000 Btu single wall, 25,000 Btu dual wall, and 50,000 Btu dual wall for LP-Gas, natural and manufactured.



Radiant Heater

Duo-Therm Div., Motor Wheel Corp.,
Lansing 3, Mich.

Model: Mayfair No. 1102.

Description: The heater uses the exclusive Duo-Therm "Equaflame" burner and extra large, seam welded, heat chambers and economizers. The flexible draft diverter allows for either a horizontal or vertical flue installation and is standard equipment.

This chrome trimmed, radiant front model has an input rating of 23,000 Btu's. The heater measures 25 in. high, 23 in. wide, and 17¼ in. deep. It is available with or without automatic controls.

Gas Heater

Estate Stove Co., Hamilton, Ohio.

Model: 5000 Series.

Description: Available in both circulator and radiant types, this line offers the new "Intensi-Fire" combustion chamber, completely porcelain-enamelled to insure against rust or corrosion. Cabinets are console or "lo-boy" type finished in pebbled, iridescent brown.

The "Air-Flow" burner — of

Wake up to Starcrest

the line you've long been daydreaming about

L. P. Gas Ranges that
are going places

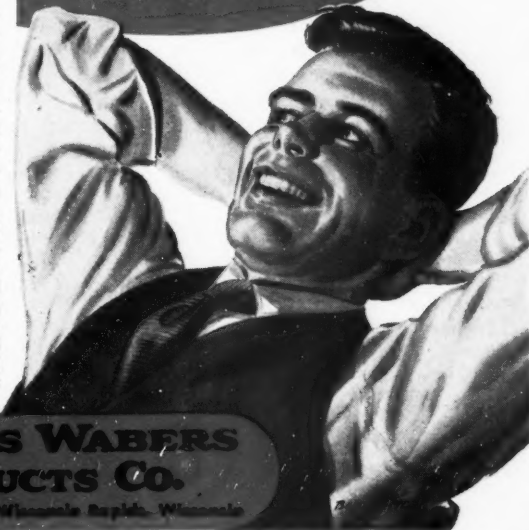
FAST



This is your dream line of L. P. gas ranges, Mr. Dealer, now brought to reality.

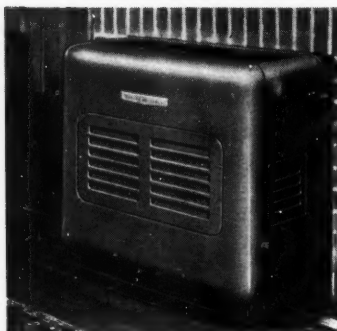
Think what you can do with a price advantage that is sensational, with convenience features that match the best functional developments of the industry, with structural quality that can be clearly seen and demonstrated.

You'll find a real business opportunity in the short, well-balanced Starcrest line — a product of Prentiss Wabers, a multi-million dollar company and America's fastest-growing manufacturer of oil-burning space heaters and household ranges of all types. Phone, wire or write



**PRENTISS WABERS
PRODUCTS CO.**

1738 Second Street, N., Wisconsin Rapids, Wisconsin



pressed steel, fully porcelain-enamelled—is a port-type, precision-made burner.

Automatic heat control, blower, and thermostatic blower control are offered as accessories for all models.



Gas Log

Glo-Fire, Inc., Elsinore, Calif.

Model: 2A, 24-in., 25000 Btu.

Application: Circulating gas-log heater for use in permanent or imitation fireproof fireplaces.

Description: It is the result of many years of research and development and is designed with great artistry of hi-test fireclay in an exact replica of oak logs.

The latest models have the new

Glo-Fire burner which is designed especially for LP-Gas. It gives maximum combustion and an even spread of heat. This is accomplished by a baffle plate cast into burner so that gas is spread along entire width. Scientifically milled slots—not holes—give long, even-burning gas flame. The patented combustion chamber is a Glo-Fire exclusive.

Models range from 12,000 to 42,000 Btu. Lengths vary from 18 in. to 36 in. All logs are AGA approved.

Space Heater Control

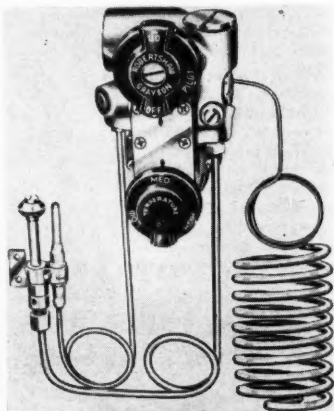
Grayson Controls Div., Robertshaw-Fulton Controls Co., 3000 Imperial Highway, Lynwood, Calif.

Model: Unitrol.

Application: Complete automatic control for temperature and pilot on modern space heaters.

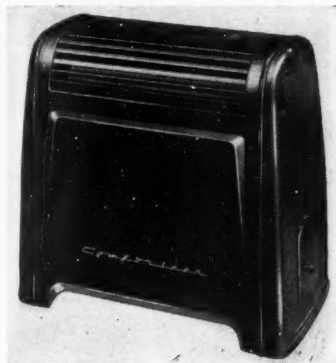
Description: The large dial is used to operate the pilot and to turn the gas on or off in the main burner. The smaller (temperature) dial may be set to obtain desired temperature.

The Unitrol has 100% safe light-



ing, 100% safety shutoff, pilot filter (when required) ahead of pilot adjustment, and front accessibility.

It is factory-installed as original equipment by heater manufacturer. It is completely installed within the heater. Accurate and sensitive hydraulic temperature-sensing element is located in "live" airstream of cold air intake to heater.



Space Heater

Inland Steel Container Co., 325 N. Cortez St., New Orleans 19.

Model: Comforteer No. 320-S.

Description: A 20,000-Btu, direct-type vented circulating heater, the Comforteer is constructed of steel with the cabinet double-seamed for strength and rigidity. It is 21 in. wide, 21 in. high, and 14½ in. deep. Its single-piece burner and mixing venturi is made of durable cast iron with slotted, raised port construction.

New automatic control equipment is available for dealer installation. A 100% safe, automatic pilot automatically shuts off gas to main burner in case of gas flow failure. Openings are so placed to direct

heat out into the room, away from walls and draperies. It is finished in neutral brown "Hi-Bake" enamel which does not discolor and is easy to keep clean. Heater is AGA-approved.

Space Heater

Locke Stove Co., 114 W. 11th St., Kansas City 6, Mo.

Model: Warm Morning 322.

Description: This AGA-approved heater for use with LP-Gas has a Btu input rating of 70,000. It is equipped with "Baso" control equipment. The cabinet of the heater is finished in two-tone, grained walnut porcelain enamel.

Large, radiant glass fronts, through which gas flames are visible, add to the heating efficiency and beauty. The cabinets are constructed with louvers on the sides and front and a large open grille on top so that heat is both radiated and circulated into the heating zone.

A special "inclined convecter tube," scientifically designed rectangular duct of heavily reinforced steel running diagonally through the com-



bustion chamber, is said to produce high heating efficiency. It functions (1) as a baffle which diverts the flow of heat and increases the surface area exposed to the fire and (2) as a channel for the movement of air from the rear to the front of the heater.

The "Warm Morning" heaters are equipped for both semi-automatic and fully automatic operation, with safety pilot standard equipment on all models.

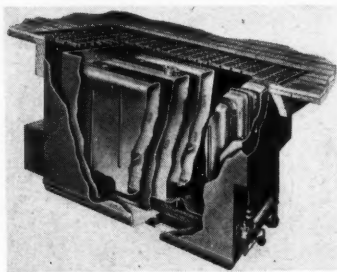
Floor Furnace

Lawson Manufacturing Co., 300 N. Lexington Ave., Pittsburgh 8, Pa.

Models: 35, 50, 65.

Description: Only 24½ in. deep, this shallow floor furnace may be installed in houses without basements. Due to recessed controls, furnace is simply lowered through the floor opening to rest securely on the joists.

Self-contained, the unit has a large radiator surface with volume heat



circulation. Construction features include: drilled port, blue flame burner; rugged flue radiators—baffled for maximum utilization of heat; inner and outer jackets of rust protected steel; 100% automatic safety pilot

control; gas pressure regulator; draft diverter.

The floor register is finished in baked on enamel. AGA-approved, it can be supplied for operation with LP-Gas, natural, and manufactured.

Winter Air Conditioner

Norge Heat Div., Borg-Warner Corp., 672 E. Woodbridge, Detroit.

Model: F-500-125.

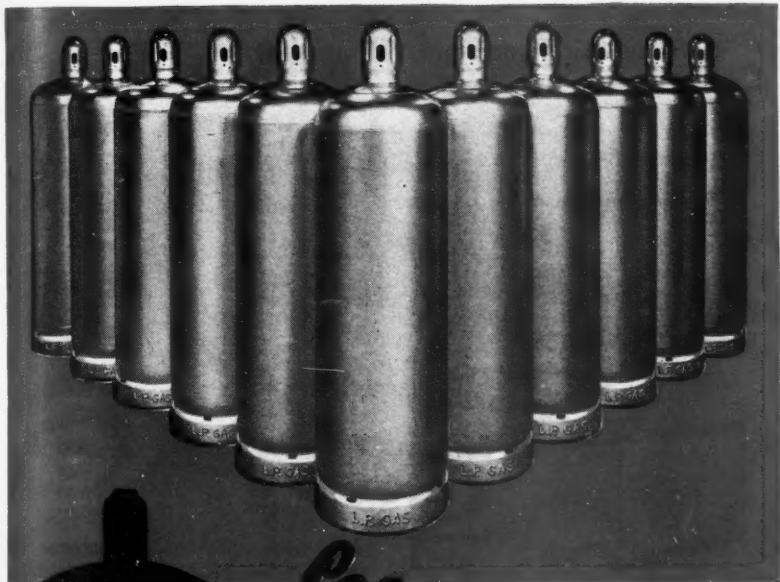
Description: Featuring the one-



piece, 12-gauge steel "Vee-Sectional" heat exchanger, the unit provides exceptional economy and high output with a minimum of space.

Completely assembled, this unit is equipped with top inlet, top discharge plenum openings, drilled, raised port cast iron burners, large capacity blower assembly, air filters, and fully automatic controls.

Approved by AGA for LP-Gas, natural, mixed, and manufactured gases, the unit measures 42¼ in. high, 24½ in. wide, and 51½ in. deep.



Lee

PROPANE and BUTANE CYLINDERS

Backed by years of experience, LEE Cylinders are manufactured to the exacting demands of both the Interstate Commerce Commission and the buyer.

For discriminating buyers, LEE offers a product designed ONLY for safe and economical service. Geographically located to efficiently, economically, and promptly serve the bottle gas market.

QUALITY
MATERIALS

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UNIFORM
THICKNESS

•
LIGHT WEIGHT

•
DISTINCTIVE
FEATURES

•
PROVEN
DESIGN

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specification
Tare weight approx.
70 lbs.

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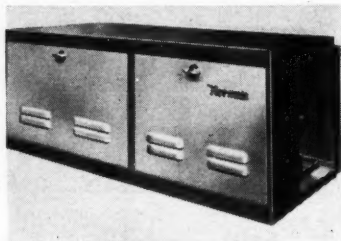
Forced-Air Furnace

Norman Products Co., 1150 Chesapeake Ave., Columbus, Ohio.

Model: Norman Southerner.

Application: This compact central heating system saves floor space — can be installed without major alterations in attic, basement, under floors, stairs, or ceiling, in utility room, or any out-of-the-way place.

Description: New developments in the line include resilient mountings to increase quietness of operation.



Slotted port immersion cast iron burner and "air-foil" design multiple tubes give uniform heat distribution in a direct horizontal line, assuring long furnace life. Pilot provides 100% shutoff.

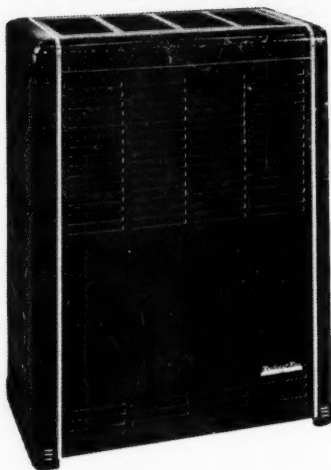
The Southerner is factory-tested and assembled and carries AGA approval.

Forced Air Circulator

Ohio Foundry & Manufacturing Co., Steubenville, Ohio.

Model: Brilliant Fire "Lowboy" Deluxe.

Description: This forced air circulator provides forced-air heat delivery and is equipped with automatic fan control. The convection tunnel



is spacious and finned throughout so as to achieve maximum utilization of the heat supply. Panel louvers are permanently fixed. Vanes are accurately pitched to provide maximum comfort from heat flow.

Other features include fully enclosed, tamper-proof cabinet; operating access for lighting and making adjustments by means of side panel door; heavy gauge steel and welded construction. Sealed radiator prevents sweating of walls or windows.

The circulator, available in 30,000 and 50,000 Btu sizes, is designed for home, office, club, store or shop.

Gas Furnace

Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio.

Model: 14 Superfex.

Application: Ideal for small homes.

Description: Occupying less than 4 sq. ft. of floor space, the "Hi-Boy" can be installed in a utility room,

ordinary-size clothes closet, in a corner of the kitchen, etc.

The furnace has a 3-stage fire and 2-speed blower. All controls, burner, filter, draft diverter, and clean-out vent are accessible from the front. A specially insulated casing permits installation of the furnace within a few inches of the wall. Btu input is 75,000.



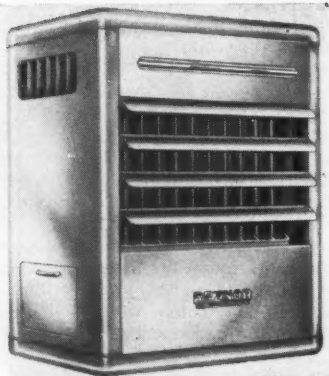
Suspended Heater

Reznor Manufacturing Co., 4 Union St., Mercer, Pa.

Model: Suspended Unit Heater.

Application: Used singly or in multiples, this heater answers the heating problems of manufacturers, merchants, service operators, and shop managers.

Description: This fully automatic, forced air, suspended type Reznor unit heater is engineered for heating efficiency, easy installation, fuel economy, and long life. Sturdy construction and quality parts keep maintenance time and cost at a minimum.



Ranging in size from 25,000 to 200,000 Btu input per hour, these units are available for operation on LP-Gas, manufactured, and natural.

Winter Air Conditioner

Rheem Manufacturing Co., 7600 S. Kedzie Ave., Chicago, Ill.

Model: Series 3202, 3203, and 3402 LP-Gas Winter Air Conditioners.

Description: This 1951 series features a new, exclusive high efficiency heat exchanger. Units are available in sizes ranging from 60,000 through 150,000 Btu input.

The heat exchanger is contoured to fit heat travel so that it is more completely wiped by the hot gases, assuring even distribution of heating element temperatures. The unit is electrically welded and airtight.

Gas-Fired Boiler

A. O. Smith Corp., Toledo 7, Ohio.

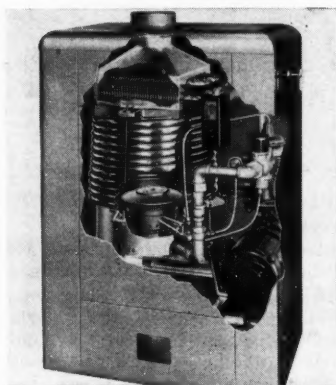
Model: HW-110.

Application: For small homes.

Description: A finned heat exchanger provides instant response to

heat demand. All copper construction with lead-alloy coating makes for additional protection against products of combustion. It has been pressure-tested to 500 lbs. The all-copper, water-walled combustion chamber utilizes radiant heat of the gas flame. The water wall provides insulation as it absorbs and carries off radiant heat.

The patented Burkay burner employs two stages of primary air entrainment plus auxiliary secondary air supply. Finished in grey "hammerloid," the boiler weighs 195 lbs. with overall dimensions of 24½-in.



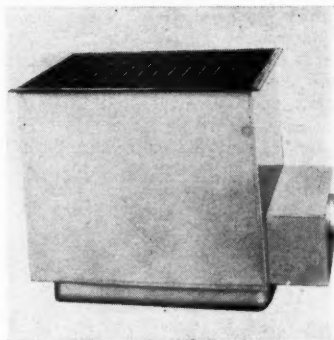
width, 18-in. depth, and 36¼-in. height. All controls are fully AGA-certified.

Floor Furnace

Surface Combustion Corp., Toledo 1, Ohio.

Model: Janitrol Floor Furnace.

Description: The outer casing of the furnace is non-corrosive steel with a hammerloid enamel finish. Heat exchangers are made durable



by a special baked, high gloss enamel finish (inside and outside). The manifolding, burners, and controls (a single, complete assembly) are protected by removable housing.

Three sizes are in production: 30,000, 50,000, and 65,000 Btu per hour input ratings. All three units are only 27-9/16 in. deep without additional overhang of valves or other fittings, and are designed for a minimum of joist cutting to simplify installation.

Completely automatic controls are available as optional equipment; all models are equipped with 100% safety shutoff. Janitrol units are all AGA-approved for all gases.

Gas Furnace

Security Manufacturing Co., 1640 Oakland St., Kansas City, Mo.

Model: Security "Hi-Lo."

Application: Suitable for basement installation or closet-type installation.

Description: This two-in-one furnace is completely factory assembled into one package unit. All controls of this forced air furnace are enclosed in one compartment. Each can be re-

moved for inspection, repair, or replacement without disturbing other wiring.

Standard-sized filters are provided with placement determined by location of return air duct connector. Four sizes are now available: 62,500,



80,000, 100,000, and 125,000 Btu input. The 150,000 will be available shortly. Automatic controls and filters are included.

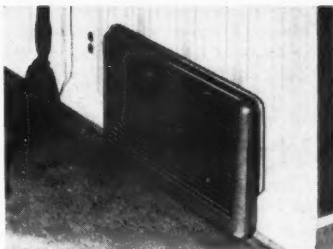
Zone-Heating Unit

Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago.

Model: South Wind No. 988 (Dual).

Application: For use recessed in a wall between two rooms.

Description: Rated at 31,000 Btu per hour, the heater employs the exclusive "safety-sealed" system in which all combustion air is drawn in from outdoors and all combustion gases are discharged outdoors. No chimney is required.



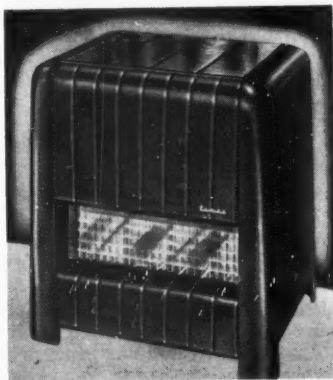
The unit burns LP-Gas, natural, manufactured, and mixed gases. Cabinet dimensions are 12 $\frac{1}{2}$ x 14 x 32 in. Thermostatic control is provided and the heater carries AGA approval.

Radiant Gas Heater

Temco, Inc., Nashville, Tenn.

Model: 85,000 Btu.

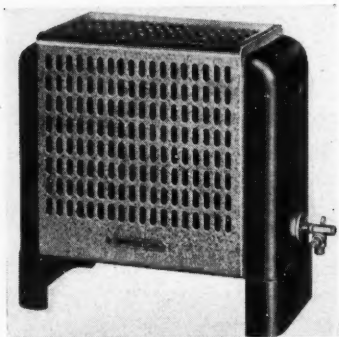
Description: Designed to meet demands for large capacity radiant vented gas heaters, this 85,000-Btu model is capable of warming three to



five rooms and is offered with a wide selection of automatic accessories.

Finished in beaver-brown porcelain enamel, it features a Pyrex glass front and is equipped with sturdy double radiants. A convenient access door is located in the right end of the heater through which the pilot may be lighted and burner adjustments made. The AGA-approved heater can be used with the Temco fan attachment, assuring even distribution of warm air.

Temco has also produced a gas panel wall furnace — single-wall, 25,000 Btu and dual-wall 50,000 Btu, approved by the AGA for LP-Gas, natural, and manufactured gas.



Cone Circulator Heater

United States Stove Co., S. Pittsburg, Tenn.

Model: Lawson Cone Circulator No. 3820-V.

Application: Particularly designed for garages, filling stations, stores, tourist camps.

Description: This 20,000-Btu model uses cast iron, odorless cones to give radiant heat in addition to circulating heat. It is finished in walnut two-

tone porcelain enamel. AGA-approved for all gases.

Specifications: 17½ in. wide; 10 in. deep; 20 in. high.

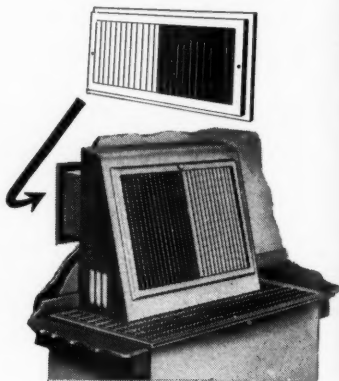
Register Furnace

Ward Heater Co., 1800 W. Washington Blvd., Los Angeles 7.

Model: Ward Bathroom Register Furnace.

Application: For hall-bedroom or bedroom-bathroom installations.

Description: This exclusive design



meets a specific need. It offers a two-room combination heater, such as hall-bedroom, bedroom-bathroom, at a minimum cost.

Furnace can be easily installed with a minimum of wall cutting for the single wall register. Louver can be opened or closed from either side so that heat can be directed into one room or divided between the two areas, as desired. It has the advantage that the cold air return is only from the hall or bedroom side.

The new furnace can be equipped with wall-type thermostat controls.

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He's on your staff but not your payroll

It was a tough heating problem. Some dealers even ducked it. But the Bryant dealer called on a proved source of engineering aid. And the Bryant distributor brought in the answer that landed the contract.

Yes, Bryant distributors welcome such opportunities. Complete and thorough factory engineering assistance is at their call. Thus, thinking of the industry's largest staff of gas heating engineers becomes a plus value for Bryant dealers.

Other plus factors of the Bryant program are the opportunity of getting most everything in LP-Gas heating equipment from a single source . . . a near-by distributor with adequate warehouse stock . . . advertising co-operation that helps pay the cost of dealer localized campaigns and backs them up with powerful national advertising.

Interested in an LP-Gas heating line that offers *more* than simply a product for you to sell? Then, by all means, write Bryant Heater, Dept. 205, 17825 St. Clair, Cleveland, Ohio.



The most complete line
of gas heating equipment in the nation

NBPA Substitutes Three District Meetings For Regular Annual Convention

AT a specially called meeting of the board of directors of the National Butane-Propane Assn. in Chicago on June 2 it was decided to change the association's policy in regard to annual conventions. Hereafter, instead of the customary general convention once annually, the organization will hold three district meetings at appropriately spaced intervals.

This decision means that the scheduled convention for Cleveland on Sept. 18-19 will become a district meeting and dates and locations for similar district gatherings will be announced later.

The objective, according to President Forrest Fram, is to save time and expense for member distributors who often find it difficult to travel considerable distances to one yearly meeting. By scattering the district conventions over the country it will result in more members being able to attend at least one of them and at lesser inconvenience and is expected to broaden the association's opportunities for better serving the industry.

The announcement comes from E. E. Hadlick, executive vice president of NBPA, Minneapolis, and lays the foundation for an entirely new approach to association activities on behalf of its members.

The Cleveland meeting this year was designated the one at which new officers for next year will be chosen. In addition to elections, on

the first day, the program will provide for industry talks and a demonstration of static electricity by G. M. Kintz and H. F. Browne, of the U. S. Bureau of Mines.

The second day will offer attendees an opportunity to visit the Cleveland testing laboratories of the American Gas Assn. in a specially conducted tour.

Because of the special Chicago meeting of the directors, they cancelled their scheduled meeting on July 12-13 at Rhinelander, Wis., and will not meet again until Sept. 18 at Cleveland.

Western Dealers Turn-Out Strong

AN apparent increase in interest in national and West Coast industry matters resulted in the best attended Western states convention held by the LPGA in 10 years when the North Pacific and South Pacific districts met jointly in San Francisco May 23-24.

More than 200 LP-Gasmen from seven Western states registered for the two-day program of worth while talks, safety demonstrations, and limited exhibits of equipment and appliances.

The good attendance was a direct tribute to the efforts of newly appointed West Coast Secretary K. B. Jacobsen to obtain a representative turnout, and admirably supported by Ed McEneaney and Harry Horn, of



Informal shot taken at the West Coast LPGA meeting in San Francisco May 24-25. Left to right: Edward C. McEneaney, director, South Pacific district; Tallent Ransome, vice president; Arthur C. Kreutzer, vice president and general counsel; Harry I. Horn, past state of California director; and Ernest Fannin, past president.

northern and southern California, respectively.

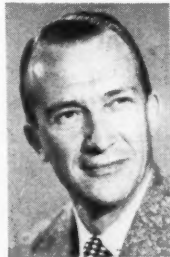
Of special importance was the message brought to the meeting by LPGA official Art Kreutzer, covering the national publicity program which has been instigated by the LPGA and other industry associations to combat the propaganda broadcast by the electrical industry to capture the rural market for the cooking, water heating, refrigeration, and house heating load. The campaign is to be financially supported by dealers, distributors, manufacturers of appliances and equipment, and fuel producers across the country. Pledges totaling nearly half a million dollars have already been made, with a million dollars the ultimate goal.

With Sid Sidenfaden emceeing the first day's events, the crowd was both instructed and amused by speakers who chose widely divergent subjects

for their themes, yet all tying in with today's basic demand that it takes sales ability and sales effort to capture the public's dollar which, as never before, is being sought not only by competitive fuel salesmen but also by every publicized household gadget from television sets to mink capes by



RALPH E. MEEDER



W. R. SIDENFADEN



LP

Gas Service Products

- **Double Seal
Copper Tube Fittings**
- **Elbow Adapters**
- **Manifold Fittings**
- **Copper Tubing and
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Installations**
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Folder 101-P Illustrates
and Describes Hays LP
Gas Service Products.

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HAYS MANUFACTURING CO.
ERIE, PENNA.



CARL GOLDEN



K. B. JACOBSEN

the well-heeled buyers constituting the current market.

Harry Horn acted as master of ceremonies on the second day. Lunches were held each day in the auditorium of San Francisco's Western Merchandise Mart where also were located the exhibits and where the meetings were held.

Speakers and their subjects for the two-day program follow:

"The Development of the West—Current Problems and Prospects"—Harry S. Schwartz, research specialist, San Francisco Federal Reserve Bank.

"Problems Affecting the LP-Gas Dealer"—Spencer H. Nitchie, Butane Corp., Phoenix.

"Glamourize Your Btu's"—M. A. Ennis, sales training director, Cribben & Sexton Co., Chicago.

"Balancing LP-Gas Production and Consumption"—Wilbur H. Somerton, assistant professor of petroleum engineering, University of California, Berkeley.

"Properties and Characteristics of LP-Gas" (demonstration)—Oliver Johnson, fire protection engineer, Standard Oil Co. of California, San Francisco.

"A Report on the National LP-Gas Promotional Program"—Ralph E.

Partial List of Contents

WHAT IS PROPANE?—Supply. Properties. Definitions.

THE BEHAVIOR OF GASES—Pressure. Specific Gravity. Density. Compression.

WHAT GOES ON IN A PROPANE CYLINDER? Construction. Filling.

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REGULATIONS—Equipment Selection and Installation. Domestic. Industrial. Safety.

BURNER DESIGN AND APPLICATION—Ports. Orifices. Burner Installation.

APPLIANCE CONVERSIONS—Inputs for Domestic, Commercial and Industrial Burners.

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BUTANE-PROPANE News

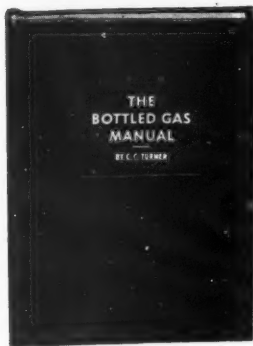
198 S. Alvarado, Los Angeles 4, Calif.

LP-GAS PIPE LINES—Friction. Sizes. Formulas. Charts.

TESTING FOR LEAKS AND ADJUSTING BURNERS—Flame Characteristics. Servicing.

FUNDAMENTALS OF THERMOSTATS—Types. Service. Expansion of matter under heat.

PILOTS AND PILOT CONTROLS—Types. Causes of Failure. Adjustment. Safety Pilots.



THE BOTTLED GAS MANUAL

SELECTING AND INSTALLING WATER HEATERS—Demand Analysis. High Bill Complaints. Service Problems. Peak Demands.

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COMPETITIVE FUELS—ELECTRICITY—Rates and Refrigeration. Meeting Electrical Competition.

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THE TOOLS OF OUR PROFESSION

Liquefied Petroleum Gas

Cities Service Oil Co.

•

A DEPENDABLE SOURCE
UNIFORM PRODUCTS
A CAPABLE SUPPLIER
TWENTY YEARS' EXPERIENCE

•

IN LP GAS ALSO

CITIES SERVICE
MEANS
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CITIES SERVICE OIL CO. (Del.)

•

BARTLESVILLE, OKLA.
CHICAGO, ILL.

Other Sales Offices

Cleveland
St. Paul

Kansas City
Toronto

Meeder, Selwyn-Landers Co., Los Angeles.

"Problems and Regulations Affecting the LP-Gas Industry"—A. C. Blackman, chief, Division of Industrial Safety, State of California.

"Gas Pressure Regulation in Relation to Performance and Safety"—Carl M. Golden, production engineer, Ransome Co., Emeryville, Calif.

In addition to discussing the national publicity program, Mr. Kreutzer told of the success which has attended industry short courses at various points throughout the country, at which attendance has reached a total of 5000. He announced that a short course will be held Sept. 6-8 at the University of California in Berkeley.

During the early evening of the first day the gas range division of the Pacific Coast Gas Assn. entertained convention attendants with a cocktail party and friendship hour in the Merchandise Mart building.

Central States Dealers Given Sales Pointers

By CRAIG ESPY

THE Central States District of the Liquefied Petroleum Gas Assn. produced a very workmanlike convention and trade show in Wichita, Kan., June 5-6. This was the first meeting held since the LPGA introduced its state integration program with the opening of its district office in Wichita.

Robert C. Tanner, new district secretary for the Central States, had charge of the conference. It was presided over by George McClellan, of Salina, president of the Kansas LP-

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Important NEWS for DEALERS on New **WARM MORNING**. L-P GAS Heaters!

A Great New Line!

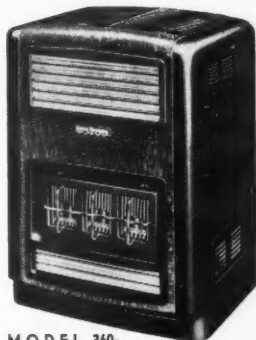
They're ready for your customers . . . the remarkable new LP-GAS Heaters bearing the famous and trade-honored name, **WARM MORNING!** They're outstanding in every detail . . . in design, in appearance, in operation and in value-giving. They'll sell . . . a-plenty . . . and bring you worthwhile profit. Many advanced features.

You're a jump ahead with **WARM MORNING** . . . a heating name known the length and breadth of the Nation . . . well known and respected in your territory. Remember! . . . sales of **WARM MORNING** Coal heaters are well into the second million. And our LP-GAS Heaters are destined to grow in popularity.

SEND FOR CATALOG in full color showing full line . . . also special discounts.

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MODEL 360-
60,000 Btu Input.
Other larger and smaller models

JOHNSON BURNERS

FOR EVERY INDUSTRIAL NEED

Whatever the need for heat there is an efficient Johnson Burner to do the job. Johnson Burners are recommended for all types of gas. They are equipped with the Johnson patented direct jet orifice regulator which permits absolute adjustment assuring perfect combustion and highest flame temperature.

Write for Free Catalog

JOHNSON GAS APPLIANCE CO.
597 E AVENUE N.W. CEDAR RAPIDS, IOWA

No. 20X



No. 60 BCD



No. 32 urn burner



Type A bunsen



THE *New* Premier

30" Gas Range

No matter what type of gas is most popular in your territory, the new Premier 30" "spacious but space-saving" gas range FILLS THE BILL! It's A.G.A. approved for manufactured, natural or L.P. gas.

Check These Big-Range Features! One-piece chrome plated cast iron burner; roomy oven; four burner cooking top with work space; large broiler; big storage compartment; fully insulated; easy-to-clean porcelain enamel finish.

Premier Since 1912

Premier

STOVE COMPANY

100 SOUTH SIXTEENTH STREET
BELLEVILLE, ILLINOIS



GEO. McCLELLAN

Gas Assn. Rudy Mahnke, former secretary of the Kansas association and now associated with the headquarters office of the LPGA in Chicago, also was on hand to participate in the program.

The Oklahoma LP-Gas Assn. was the co-sponsor with Kansas of the conference but did not have as many delegates present as did the latter. The lack of attendance on the part of the Oklahomans was probably due to the harvest season. Official action was not taken to hold next year's meeting at some point in Oklahoma, but sentiment for this seemed to be building up in order to promote larger attendance and participation from both states. Exact registration at the conference was 232.

Special emphasis of the program was placed upon "Selling." Dynamite Sam Kaplan of the Personnel Research Institute of Wichita kicked-off this theme at the first day's luncheon in a talk on, "Increase

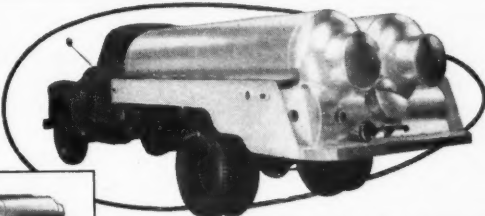
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Carter

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Liquefied Petroleum Gases Since 1931
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THE CARTER OIL COMPANY
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Deluxe Model Twin Barrel Truck Unit

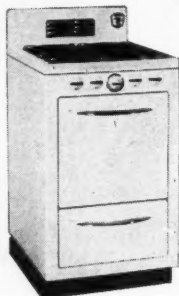


Production Built—Low Initial Cost—Smart Appearance—Safe—Recessed Relief Valves—Exceptionally Well Balanced—No Frame Reinforcing Necessary—Unit in Operation in Most States—Motor Fuel Tank in Rear Well Protected—Heavily Undercoated—Special Grade Aluminum Paint



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Manufacturers of Fine LP-Gas Equipment
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Truck Tanks • Tractor Motor Fuel Tanks



**OUR
FASTEST
SELLING
LP-GAS
RANGE**

**With These "Sweet 16"
Features!**

1. "Robertshaw" OVEN HEAT CONTROL
2. Large, Seamless GLASS LINED OVEN
3. Harper-Wyman Top Burners Non-Clog, Speedy Action
4. Top Burners, 9x10 1/4" Centers
5. 2 1/2" THICK INSULATION Owens-Corning Fibreglass
6. Reinforced Steel Body Frame
7. ROLLER-BEARING DRAWER BROILER Glass Lined Throughout
8. Heavy RUST-RESISTING OVEN RACKS, Non-Tilt, Easy-Sliding, Self-Stopping
9. Porcelain Enamel Cooking Grids
10. Porcelain Overflow Burner Tray
11. Automatic Instant Top Burner Lighting
12. LOW GAS CONSUMPTION Insured by Perfectly Fitted Doors
13. Matches Modern Kitchen Equipment
14. Flush to Wall Construction Ample toe space.
15. Chrome Trim Door and Valve Handles
16. American Gas Association Approved

Write for FREE Catalog and Prices on the complete EAGLE line, today.

EAGLE FOUNDRY CO.
BELLEVILLE ILLINOIS



MEL TROTTER



BOB TANNER

Your Sales." He urged the delegates to learn elementary and fundamental facts about the products they are selling in order to increase sales through "know-how." Every dealer and salesman, he said, should engage in a program of self improvement. "The mental attitude of the salesman should be 'I can and I will.' The salesman should also have a burning desire for accomplishment. He should be ambitious, should have initiative and ability. Many pencils were in evidence copying the selling formula given by Mr. Kaplan, which was: Show the advantages of your product and services. Show proof of these advantages by presenting logical testimonies from others concerning the product of service. Create action by closing the order.

Mel Trotter, Carolina Butane Gas Co., Columbia, S. C., had the spot on the program to explain the national LP-Gas promotion program—to tell what it is, why it is needed, who is back of it, what it should accomplish and when advertising will start. He also called upon the dealers present to sign up to participate financially in the program. Three hundred fifty producers, appliance manufacturers and dealers have already joined.

PANOMA CORPORATION

HOW

some wholesalers
give complete
consumer satisfaction!

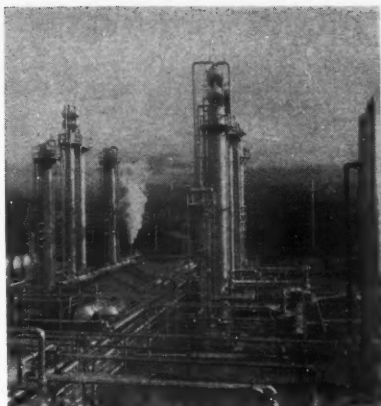
From North Dakota to Georgia to New Mexico some wholesalers just use Panoma L-P gases. They know that uniform quality, freedom from sulfur, residue and moisture make a real difference in consumer satisfaction. Since '38 consumer-wise wholesalers have used our gases. Today they still receive high purity propane and butane processed from gas from our own wells in two plants completely equipped with automatic controls. You can know how to give complete consumer satisfaction too. Find out now!

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AMARILLO, TEXAS

PANOMA CORPORATION



Fractionating area of modern Cargray Plant at
White Deer, Texas

♪ *Enterprise* ♪

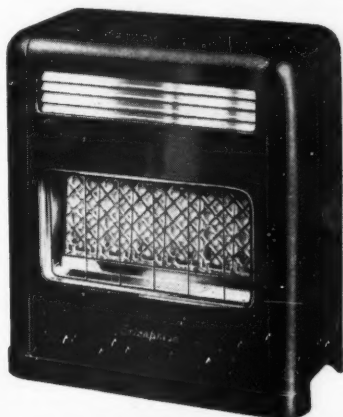
and the Selling is Easy . . .

♪ *Enterprise* ♪

and the Profit is High!

You can set it to music—and you'll want to when you compare the value and profit offered by the LP Line of ENTERPRISE Gas Circulator Heaters. They're designed for utmost customer appeal; and engineered with ENTERPRISE precision to give customer-value and insure profitable dealership. Write for catalog sheets, prices, and specifications today.

Phillips & Buttorff
MANUFACTURING COMPANY
NASHVILLE, TENN. • ESTABLISHED 1858



20,000 TO 60,000 BTU
AGA APPROVED

It's a SUCCESS



WELDIT DISPLAY UNIT IS A PROVEN PROFIT MAKER

Dealers are producing greater profits with the New Weldit Display Unit.

This attractive, multi-colored counter or wall display unit will increase your torch sales. Order yours today. Weldit Display Unit comes complete with the following Weldit Torches:

(1) C-48-P. Weldit Full Weldimatic Trigger Control Torch. (L-P gas and atmospheric air.) Adjustable pilot light, needle valve adjustment. For heating, soldering and yes, even chicken singeing.

(1) C-48-WP. Weldit Torch. Same as above, only non-automatic.

(1) No. 484 Large Burner L-P.

(1) C-48-B. Weldimatic Torch with No. 470 Burner. Uses propane gas and atmospheric air, provides flame 3" wide at 35 lbs. pressure for paint removal from wood or metal. A hot sales number.

(1) No. 4826-D. Safety Check Tank Connection. Shuts off gas flow if hose becomes ruptured or disconnected when tank is open. 12 ft. of Hose included with unit.

Each of the above items can be replaced — just reorder by number on the torch.

Remember, all Weldit L-P Torches are designed to operate at full tank pressure adjusted at torch valve (no regulator is needed). Each Weldit Torch is equipped with a filter device that eliminates foreign matter.

Cash in on this plan. Order your self-merchandising display board unit today at this special price—

\$35.00, retails for \$60.00!

Weldit
INC
SINCE 1938

994 OAKMAN BLVD

DETROIT 6, MICH

A. T. "Ted" Carrow, Cribben & Sexton Co., Omaha, carried the sales ball on the second day's program. Introduced by Elmer Cone of Kansas City, Mr. Carrow displayed advertisements to show what the electric industry is doing to win the market. Then he showed through a cooking demonstration that "Good Cooking is Gas Cooking"; that you do not have on the gas range seven buttons to punch, and be confused over; that you can cook in any type of pot or pan when you cook with gas instead of requiring a pot or pan that just fits the heating element. He also displayed a black-bottomed pan that had become black through electric usage. He further urged the dealers to demonstrate the good cooking qualities of the gas range by having a range hooked up on the sales floor and by demonstrating the range in homes, schools and churches.

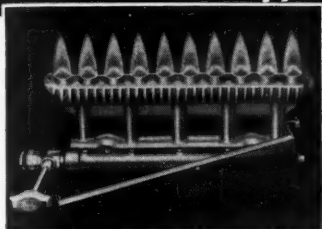
A semi-technical paper by Floyd Selim, of Philgas Division of Phillips Petroleum Co., on "Tractor Carburetion" traced the reasons for the rapid increase in the usage of LP-Gas as tractor fuel in the West, Southwest and Mid-Continent states. He stated that the use of LP-Gas for tractor fuel appears to be the only solution to balancing the seasonal demand for the fuel.

"Farm tractors," he said, "begin to work in the spring when the domestic and industrial heating loads fall off. This load also continues high during the summer and falls off very rapidly in the fall when the heating load comes on again." Slides and drawings were presented in this talk to illustrate how the carburetion system on LP-Gas engines operates.

Other features of the program were made up of LPGA sound films, social activities (banquet and dance) fellowship hour, and attendance at the exhibits.

RAY-GLO

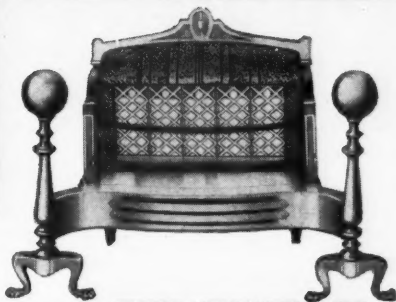
offers the complete line



Ray-Glo's indestructible burner has no moveable parts to adjust. No variable controls—nothing left to chance.

Ray-Glo has control valve located in the cool zone—will not dry out or leak.

Ray-Glo has stainless steel burner ports that will not rust or corrode.



Ray-Glo Burners last indefinitely

RADIANT HEATERS

UNVENTED CIRCULATORS

VENTED CIRCULATORS

MANTEL INSERTS

RAY-GLO, INCORPORATED • SHELBYVILLE, INDIANA

MAKE WAY FOR R.J.!

*... and get the service
and equipment you've
been looking for ...*

BUTANE . PROPANE . EQUIPMENT

Tanks, ICC Cylinders, Regulators, Climax Carburetors
for conversions of tractors, Century Carburetors

**RAIL SERVICE ANYWHERE . . . TRANSPORT SERVICE IN THE MID-CONTINENT
AREA TO BULK PLANTS NOT HAVING RAIL FACILITIES OR STORAGE TOO
SMALL TO ACCOMMODATE TANK CARS.**



MARKET PRICE

TO CONTRACT CUSTOMERS

R. J.
TULSA, OKLAHOMA

Allison CO.

See the Complete
NEW SERIES OF
VIKING
L-P GAS PUMPS

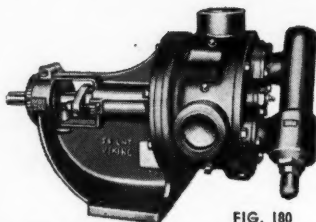


FIG. 180

*Check today the new line of
Viking LP-Gas pumps.*

New features include:

1. Special metallic packing in extra long stuffing boxes for leak resistant operation.
2. Special non-lubricated idler bearing for handling LP-gas (used in all power driven pumps).
3. Treated head and bracket gaskets for non-leak operation.

With these new features are included the famous Viking heavy-duty thrust bearing construction, revolvable casing for easy port location, and safety valve on pump head. All Viking L P-gas pumps feature the gear-within-a-gear construction for dependable delivery.



Write today for new bulletin 2303B which illustrates and describes these new units.

VIKING
PUMP COMPANY
Cedar Falls, Iowa

State Associations

Illinois

The Illinois LP-Gas Assn. met May 26 at the Abraham Lincoln hotel, Springfield, Ill., to elect officers and hear interesting industry discussions, according to Stan Beske, association president.

Scheduled speakers and their topics included George R. Postelwait, Bastian-Blessing Co., "Pressure Control and Distribution"; G. W. Keller, Ensign Carburetor Co., "Carburetion (Mobile and Tractor)"; and Harris Goodwin, Bastian-Blessing, "A Picture of a Thousand Words" (accident slides).

Minnesota

According to John L. Locke, secretary of the Minnesota Petroleum Gas Assn., a meeting of his group will be held Friday, July 14, at the Hotel Duluth in Duluth.

L. H. Dow, president of the association, urges all Minnesota LP-Gasmen to attend the meeting for discussion of mutual problems.

Indiana

At the May 18th meeting of the board of directors of the Indiana Liquefied Petroleum Gas Assn., it was decided to draw up an Indiana LPG code of ethics which will indicate the willingness of association members to cooperate with the provisions of the code regarding safe operation, installation, and compliance with rules and regulations. It is felt that this pledge of cooperation will materially assist and promote customer relations.

Considerable discussion centered

Helco "75" is IDEAL for all Domestic Installations

The Helco "75" is extremely popular with dealers desiring a compact, light-weight regulator for domestic service. It is ideal because it will function perfectly under all climatic conditions. Dealers who have used the Helco "75" consider it a Star performer.



Model 75

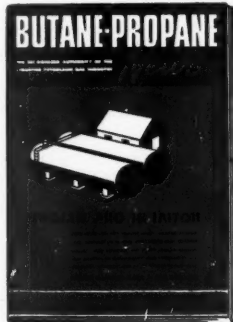
U.L. Cap. Rating.....100 cu. ft.
Delivery Pressure.....11 in. w.c.
Inlet Connections.....P.O.L.
Outlet Connections..... $\frac{1}{2}$ in. f. pipe



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We can supply a wide assortment of spuds, orifices and other parts for converting domestic and commercial equipment to any type gas. Also, a complete line of repair parts for all types of gas meters.

Write for catalog.

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 COMPANY**

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*Serving the Gas Industries
 For Over 40 Years*

If you're panning for
 L-P Gas Equipment
 gold—you'll find
 that our famous
 name—Quality
 L-P Gas Equip-
 ment is your
 best bet!



REGO L P GAS EQUIPMENT—Rochester Cri-
 terion Gauges—Aeroquip Hose and Fittings—



Anderson Flare Fittings and
 Copper Tubing—Weco-Trol
 —I C C Cylinders.

**GAS EQUIPMENT
 SUPPLY CO.**

127 ELLIS ST. N. E.

ATLANTA, GA.

around a suitable time for holding the annual meeting and trade show. A fall meeting had been planned but to make it more convenient for dealers and exhibitors alike, the schedule has been changed to February, 1951.

Harold C. TenBrook was named chairman of the convention committee and officers and directors of the association—T. M. Feely, president, Joseph Crowden, vice president, and C. P. Keeley, secretary-treasurer—were made active members of the committee.

Missouri

A. H. Bauer, Morgan County Gas Co., Versailles, was elected president of the Missouri LP-Gas Assn. at the annual convention May 17-19 at the Hotel President, Kansas City. According to Robert W. Hadlick, executive secretary, more than 300 persons registered for the convention and trade show.

Other officers elected include C. A. Enos, Jr., Cook Gas Co., St. Joseph, vice president, and H. G. Baur, Butane Gas & Appliance Co., Webster Groves, treasurer.

Talks were delivered on varying topics. O. L. Garretson and Si Darling spoke jointly on tractor carburetion. Requisites for forming an insurance company within the state were discussed by Byron Beavers. Lee Brand, Empire Stove Co., spoke on the national promotion program; Jack Lumpkin's talk was entitled "Statistics on Loss of Profits"; Eugene E. Bishton, LPG Credit Corp., and H. Roe Bartle were luncheon speakers on the last day.

Friendship hours, a banquet, and floor show were the social highlights of the meeting. Wives in attendance at the convention have started organizing a "Mrs. LP-Gas Dealer" Club.